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ABSTRACT

The results of a study of the indexing provided by the "Bibliography of Agriculture" and 15 related secondary services are described. The data elements used with printed citations and the indexing features of each service are described and compared. A methodology was developed to compare the terms provided by the Bibliography and each other service for the same citations. The percentages of related and unrelated term pairs (one term used by the "Bibliography of Agriculture" compared with one term used by the other service) were given for services which use multiple term indexing and for those which use single term indexing. The number of subject access points per citation provided by each service for the same source material was also determined and compared. The unique subject access points contributed by the Bibliography and each other service were measured. Other comparisons were made between the index terms used by the other services and the "Bibliography of Agriculture" subject index, the index term words assigned to an article, the words in the title of the article, and the subject headings used by the "Bibliography of Agriculture" and other services for the same citations. (Author/SG)

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STUDY AND COMPARISON OF THE INDEXING OF THE BIBLIOGRAPHY OF AGRICULTURE IN RELATION TO THE INDEXING OF 15 OTHER SECONDARY SERVICES

Prepared by

Charles P. Bourne
Madeleine S. Kasson
Jeanne B. North

Prepared for

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16. Abstract This report describes the results of a study of the indexing provided by the Bibliography of Agriculture and 15 related secondary services. The data elements used with printed citations and the indexing features of each service were described and compared.

A methodology was developed to compare the terms provided by B of A and each other service for the same citations. The percentages of related and unrelated term pairs (one term used by B of A compared with one term used by the other service) were given for services which use multiple term indexing and for those which use single term indexing. The number of subject access points per citation provided by each service for the same source material was also determined and compared. The unique subject access points contributed by B of A and each other service were measured. Other comparisons were made between the index terms used by the other services and the B of A subject index, the index term words assigned by B of A to an article and the words in the title of the article, and the subject headings used by B of A and other services for the same citations.

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I. INTRODUCTION

This indexing study was part of a more general study of the relationship of the Bibliography of Agriculture (B of A) to fifteen other secondary services. Reports were prepared earlier on the coverage and overlap studies of this effort.*

The objective of this indexing study was to determine the relationship of B of A indexing to the indexing performed by 15 other services with agricultural R&D interests. The study was done by a review of data about these services, as well as a comparative study of the indexing done by each of the services for a common body of citations.

The National Agricultural Library staff specified the following secondary services to be studied with regard to their relationship to B of A:

Biological Abstracts (BA)
Biological & Agricultural Index (BAI)
Chemical Abstracts (CA)
Dairy Science Abstracts (DSA)
Engineering Index (EI)
Forestry Abstracts (FA)
Horticultural Abstracts (HA)
Index Medicus (IM)
Index Veterinarius (IV)
Meteorological & Geoastrophysical Abstracts (MGA)
Pesticides Documentation Bulletin (PDB)
Public Affairs Information Service (PAIS)
Textile Technology Digest (TTD)
Tobacco Abstracts (TA)
World Agricultural Economics & Rural Sociology Abstracts (WAERSA)

All of the above services, with the exception of BAI, IM, PDB, and PAIS, provide abstracts in addition to a citation. This group of services was intended to represent a cross-section of services that had a relationship to agriculture. These services are represented throughout this report by the abbreviations noted above.

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*Bourne, Charles P. Characteristics of Coverage by the Bibliography of Agriculture of the Literature Relating to Agricultural Research and Development. Report No. IGC-PA-69-38. 1 June 1969.

Bourne, Charles P. Overlapping Coverage of Bibliography of Agriculture by 15 Other Secondary Services. Report No. IGC-PA-69-39. 1 June 1969.

II. MAJOR CHARACTERISTICS OF THE SERVICES STUDIED

A. GENERAL

Some of the general characteristics (e.g., publisher, estimated circulation) of the services studied are listed in summary form in Table I. All of the services are English-language, and all are published in the United States or England. Several of the services such as IV and WAERSA are more directly related to agriculture than others such as CA and BA. Published reports of the operating practices and procedures of several of these services are cited in the bibliography at the end of this section. For this report, particular attention was given to finding reports that discussed the indexing practices of those services.

In indexing, a useful distinction can be made between access points which can be extracted from the data elements in the citation and those which are added from examination of the full publications cited. Access points such as author, corporate author, patent or report number, when present in the citation can be pulled out easily for indexing. In general, subject indexes, including corporate names as subjects and geographic location indexes must be prepared from the full text. Keyword-in-title indexes are an exception in that they provide some subject access using only the citation. It is also true that author and corporate author indexes compiled from the citations may serve sometimes as subject approaches. However, as a general principle it is subject access which is not implicit in the transcription of the citation, and which requires intellectual as contrasted with clerical effort. Therefore in considering the indexing provided by the various services the subject and non-subject features have been distinguished.

Figures 1 and 2 show full size, typical entries in the printed author and subject indexes, respectively, of these services. This presentation shows the great variety in size and style of typography used by the various services. Many use all capitals, which is a consequence of computer production but is more difficult to read. In addition, this kind of printout is often photo-reduced, making it even less legible. There is also variation in the content of the indexes, e.g., brief citation, full citation, or reference number only. The full page format of each service could not be shown here, but this too would indicate further visual variety. More specific characteristics of the indexing practices of each of the services are described in the following sections.

Service	Publisher	Type of* Publisher	Country	Frequency of Publication	Estimated Circulation	Annual Subscription Cost for U. S. Subscribers	Total Number of Items Covered in 1967	
							References	Abstracts
Bibliography of Agriculture	National Agricultural Library	G	U.S.A.	Monthly, except no December announcement issue	2,500	$26.50	94,238	--
Biological Abstracts	Biosciences Information Service of Biological Abstracts	N	U.S.A.	Semi-Monthly		$800, $640 non-profit and indiv.	--	125,026
Biological and Agricultural Index	H. W. Wilson Co.	C	U.S.A.	Monthly, except Sept.	943	$35.00	40,000 est.	--
Chemical Abstracts	Chemical Abstracts Service	N	U.S.A.	Weekly, except June when an additional issue is published June 30	6,660	$1550, but $500 grant awarded to eligible educational institutions	--	240,000
Dairy Science Abstracts	Commonwealth Bureau of Dairy Science & Technology	G	Gt. Britain	Monthly	2,000	$31.50	--	4,872
Engineering Index	Engineering Index, Inc.	N	U.S.A.	Monthly		$450.00	--	56,560
Forestry Abstracts	Commonwealth Forestry Bureau	G	Gt. Britain	Quarterly	1,400	$31.50	--	6,736
Horticultural Abstracts	Commonwealth Bureau of Horticulture & Plantation Crops	G	Gt. Britain	Quarterly	1,900	$36.00	--	8,045

Table I

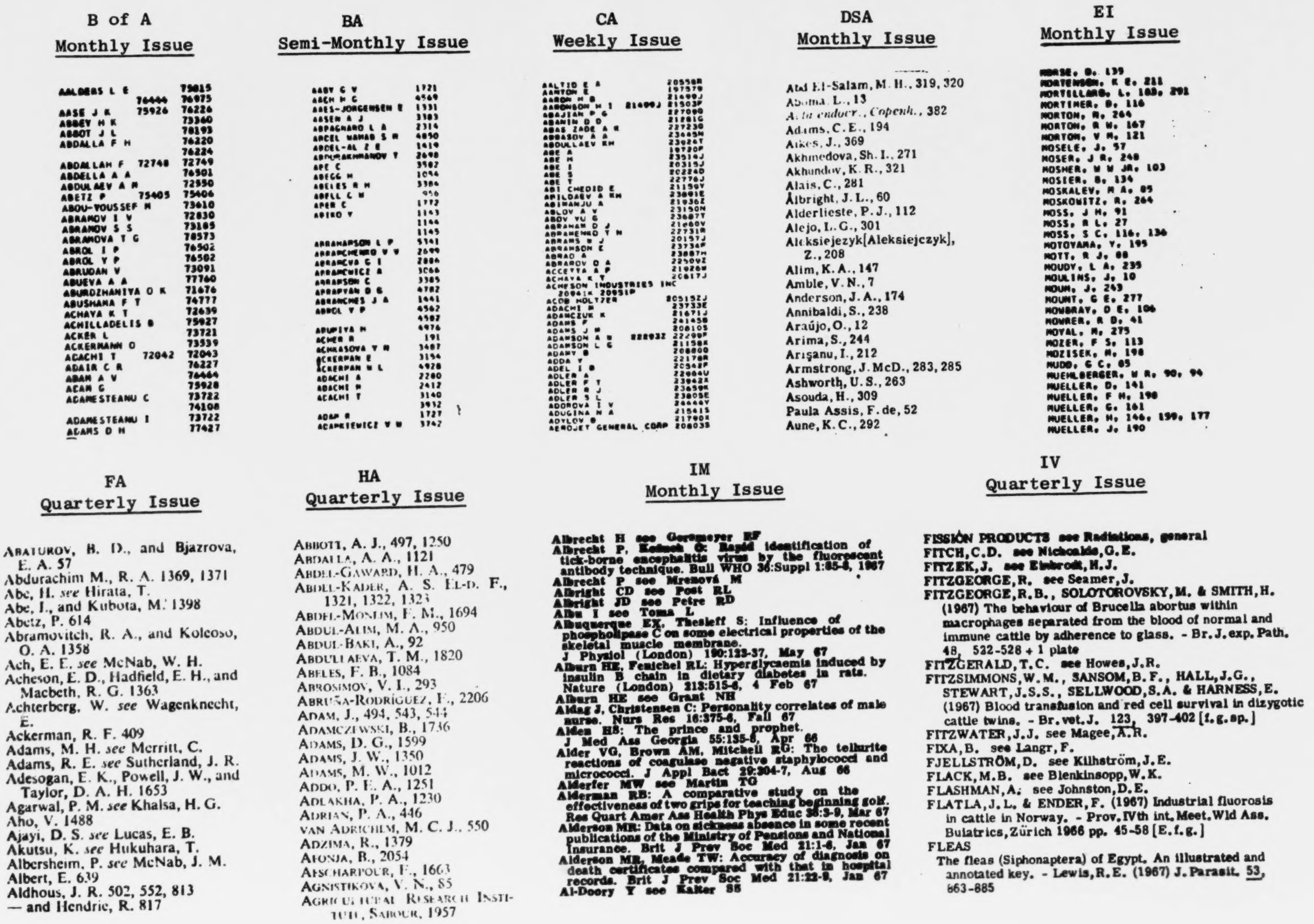
General Characteristics of Selected Secondary Services Related to Agricultural R&D

Service	Publisher	Type of* Publisher	Country	Frequency of Publication	Estimated Circulation	Annual Subscription Cost for U. S. Subscribers	Total Number of Items Covered in 1967	
							References	Abstracts
Index Medicus	National Library of Medicine	G	U.S.A.	Monthly	5,977	$63 ($72.25 for annual cummulation)	168,310 FY67	--
Index Veterinarius	Commonwealth Bureau of Animal Health	G	Gt. Britain	Quarterly		$45.00		--
Meteorological and Geoastrophysical Abstracts	American Meteorological Society	N	U.S.A.	Monthly		$400 for Gov't agencies & industrial, commercial, scientific & research organizations; $200 educational institutions & public libraries; $30 individual AMS members; $40 individual non-AMS members	--	8,998
Pesticides Documentation Bulletin	National Agricultural Library	G	U.S.A.	Bi-weekly		$14.00	27,327	--
Public Affairs Information Service Bulletin	Public Affairs Information Service, Inc.	N	U.S.A.	Weekly		$100.00		--
Textile Technology Digest	Institute of Textile Technology	N	U.S.A.	Monthly	950	$50.00	--	10,926
Tobacco Abstracts	Tobacco Literature Service D.H.Hill Library, No. Carolina State Univ.	N	U.S.A.	Monthly, except no Dec. announcement issue	850	$7.00	--	2,966
World Agricultural Economics and Rural Sociology Abstracts	Commonwealth Bureau of Agricultural Economics	G	Gt. Britain	Quarterly	900	$22.50	--	4,455

*G = Government, N = Non-profit, C = Commercial

Table I (Concluded)

General Characteristics of Selected Secondary Services Related to Agricultural R&D



B of A
Monthly Issue

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AASE J K 75926 76226
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AGNISTIKOVA, V. N., 85
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Albu I see Toma L
Albuquerque EX, Thesleff S: Influence of phospholipase C on some electrical properties of the skeletal muscle membrane. J Physiol (London) 190:123-37, May 67
Alburn HE, Fenichel RL: Hyperglycaemia induced by insulin B chain in dietary diabetes in rats. Nature (London) 213:515-6, 4 Feb 67
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Aldag J, Christensen C: Personality correlates of male nurse. Nurs Res 16:375-6, Fall 67
Alden HS: The prince and prophet. J Med Ass Georgia 55:135-6, Apr 66
Alder VG, Brown AM, Mitchell RG: The tellurite reactions of coagulase negative staphylococci and micrococci. J Appl Bact 29:304-7, Aug 66
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Alderson MR: Data on sickness absence in some recent publications of the Ministry of Pensions and National Insurance. Brit J Prev Soc Med 21:1-6, Jan 67
Alderson MR, Meade TW: Accuracy of diagnosis on death certificates compared with that in hospital records. Brit J Prev Soc Med 21:22-8, Jan 67
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FITZGEORGE, R.B., SOLOTOROVSKY, M. & SMITH, H.
(1967) The behaviour of Brucella abortus within macrophages separated from the blood of normal and immune cattle by adherence to glass. - Br. J. exp. Path. 48, 522-528 + 1 plate
FITZGERALD, T.C. see Howes, J.R.
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(1967) Blood transfusion and red cell survival in dizygotic cattle twins. - Br. vet. J. 123, 397-402 [f.g.sp.]
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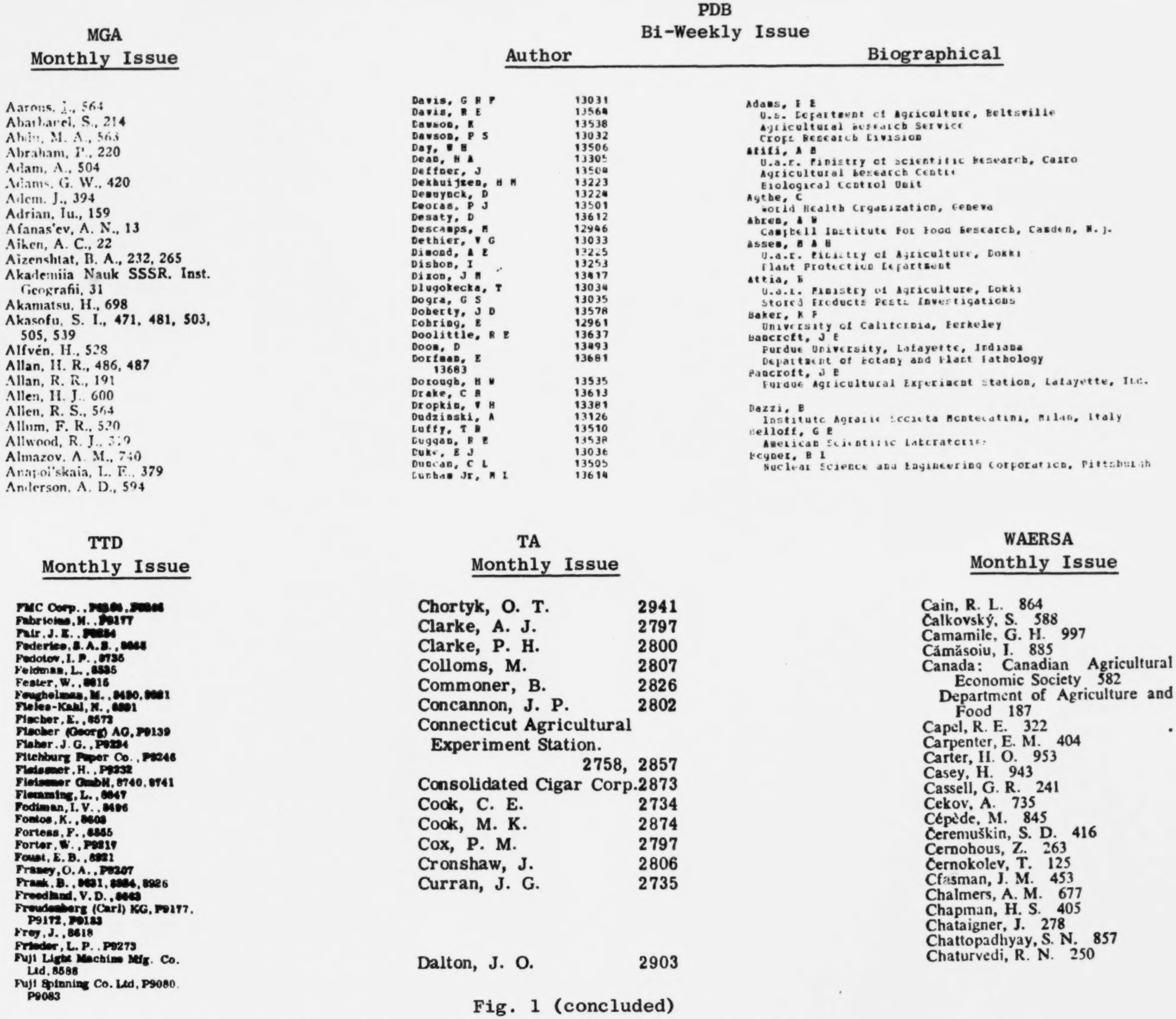
FLEAS
The fleas (Siphonaptera) of Egypt. An illustrated and annotated key. - Lewis, R.E. (1967) J. Parasit. 53, 663-885

Fig. 1

Typical Examples of Author Indexes of Each Service



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Adams, F E
  U.S. Department of Agriculture, Beltsville
  Agricultural Research Service
  Crops Research Division
Afifi, A B
  U.A.R. Ministry of Scientific Research, Cairo
  Agricultural Research Centre
  Biological Control Unit
Agthe, C
  World Health Organization, Geneva
Ahren, A W
  Campbell Institute For Food Research, Camden, N.J.
Assem, M A H
  U.A.R. Ministry of Agriculture, Dokki
  Plant Protection Department
Attia, R
  U.A.R. Ministry of Agriculture, Dokki
  Stored Products Pests Investigations
Baker, K F
  University of California, Berkeley
Bancroft, J E
  Purdue University, Lafayette, Indiana
  Department of Botany and Plant Pathology
Bancroft, J B
  Purdue Agricultural Experiment Station, Lafayette, Ind.

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Belloff, G B
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TTD
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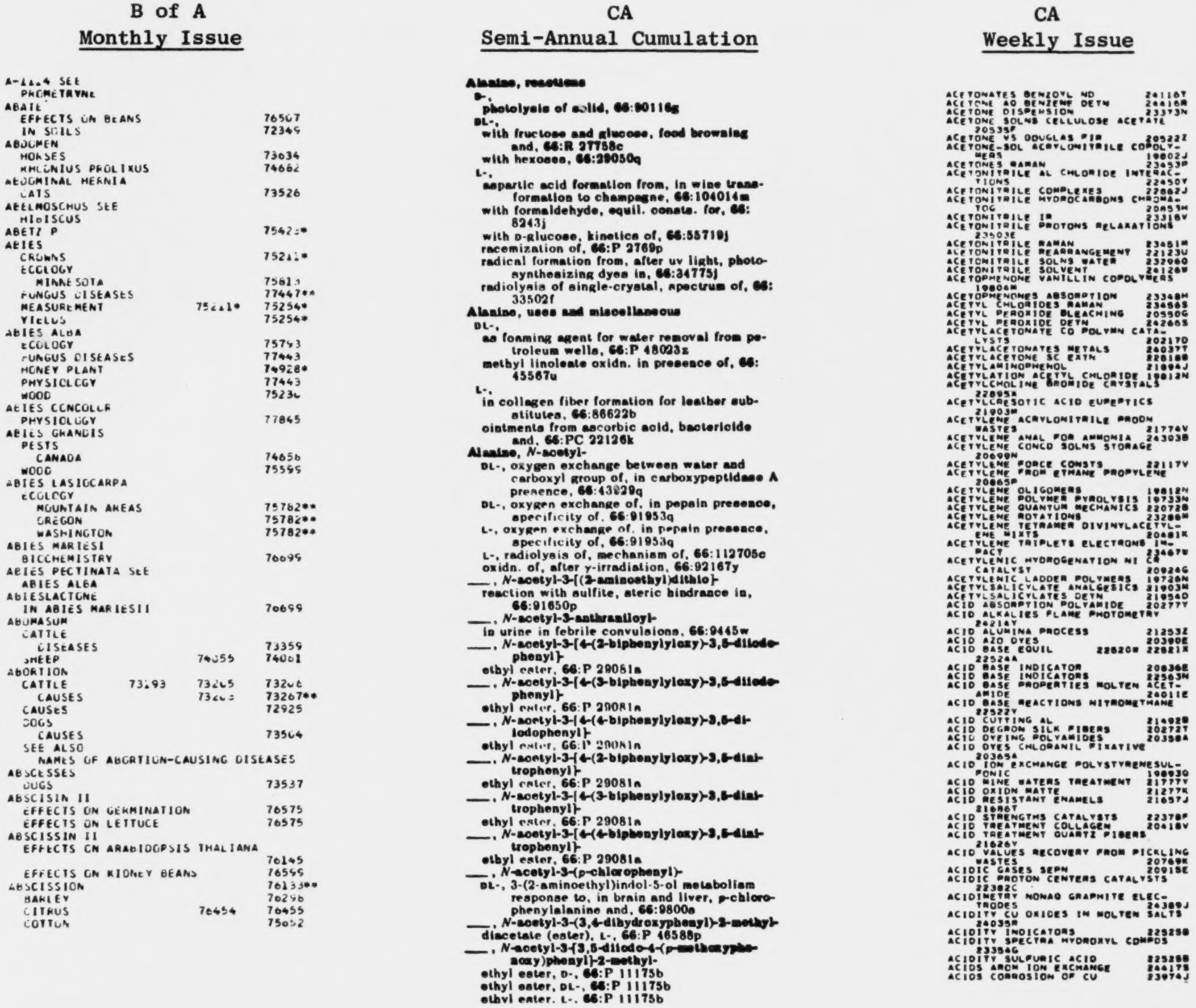

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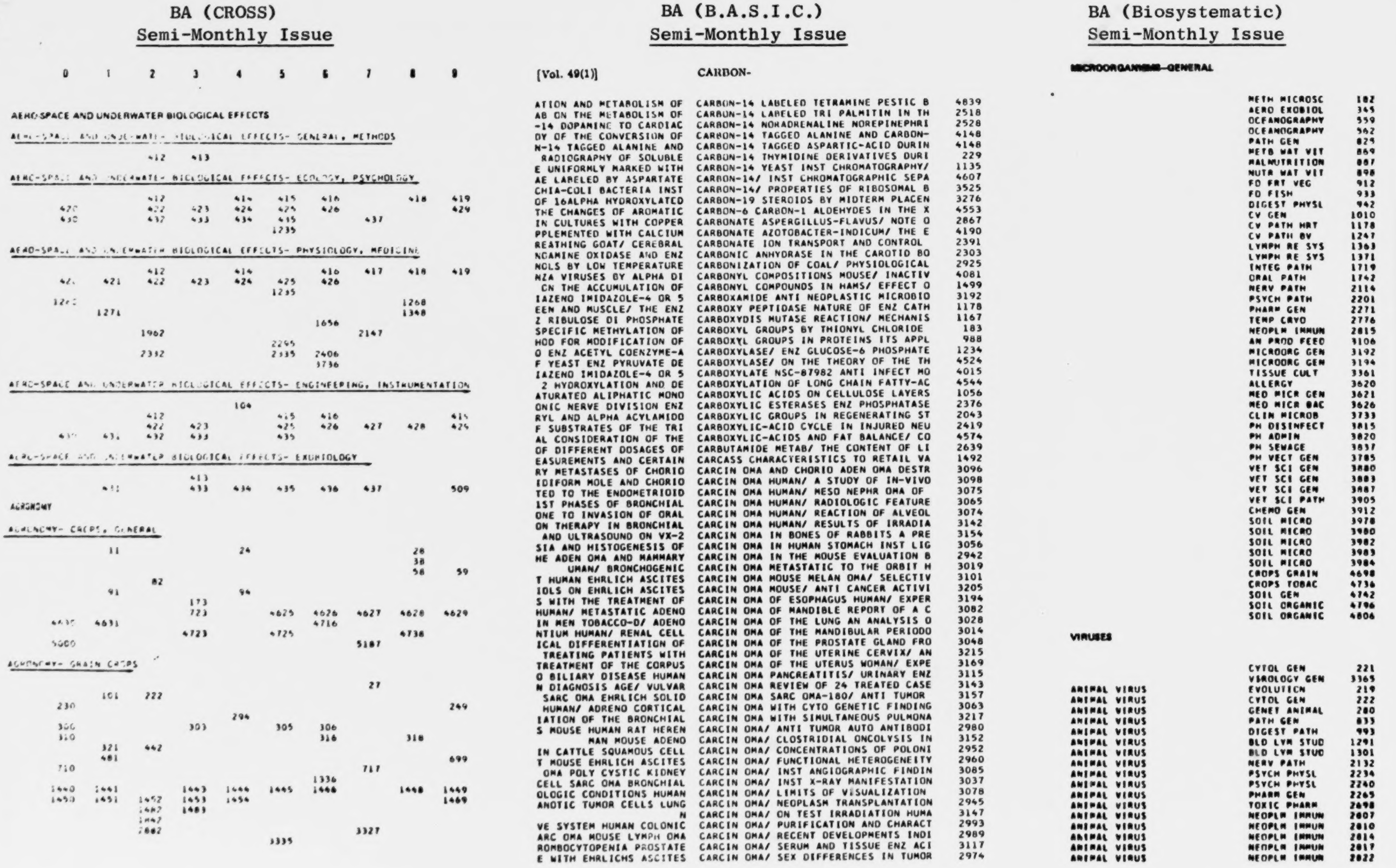

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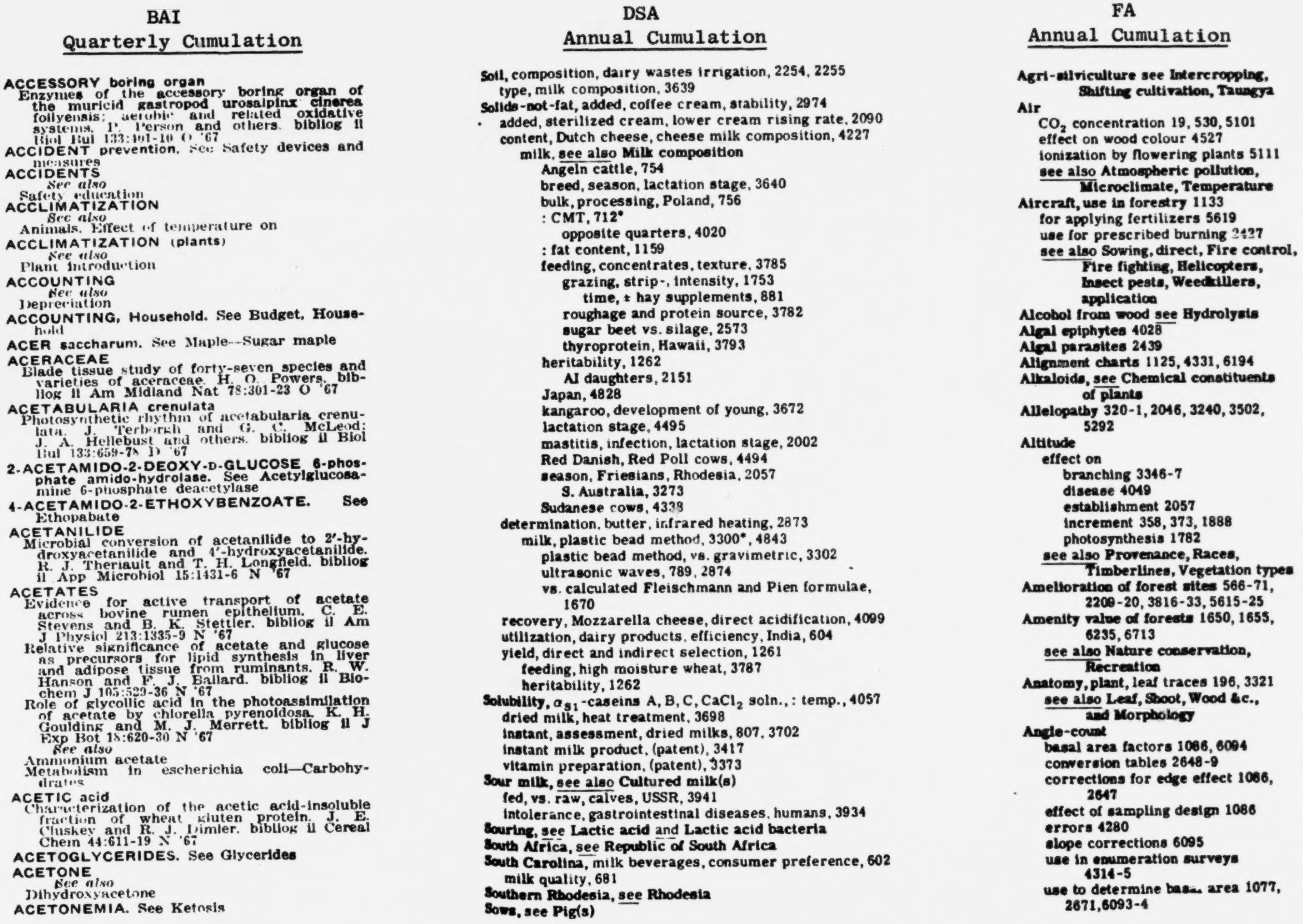

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- **ACERACEAE**
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- **4-ACETAMIDO-2-ETHOXYBENZOATE.** See Ethopabate
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  - Ammonium acetate
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- **ACETOGLYCERIDES.** See Glycerides
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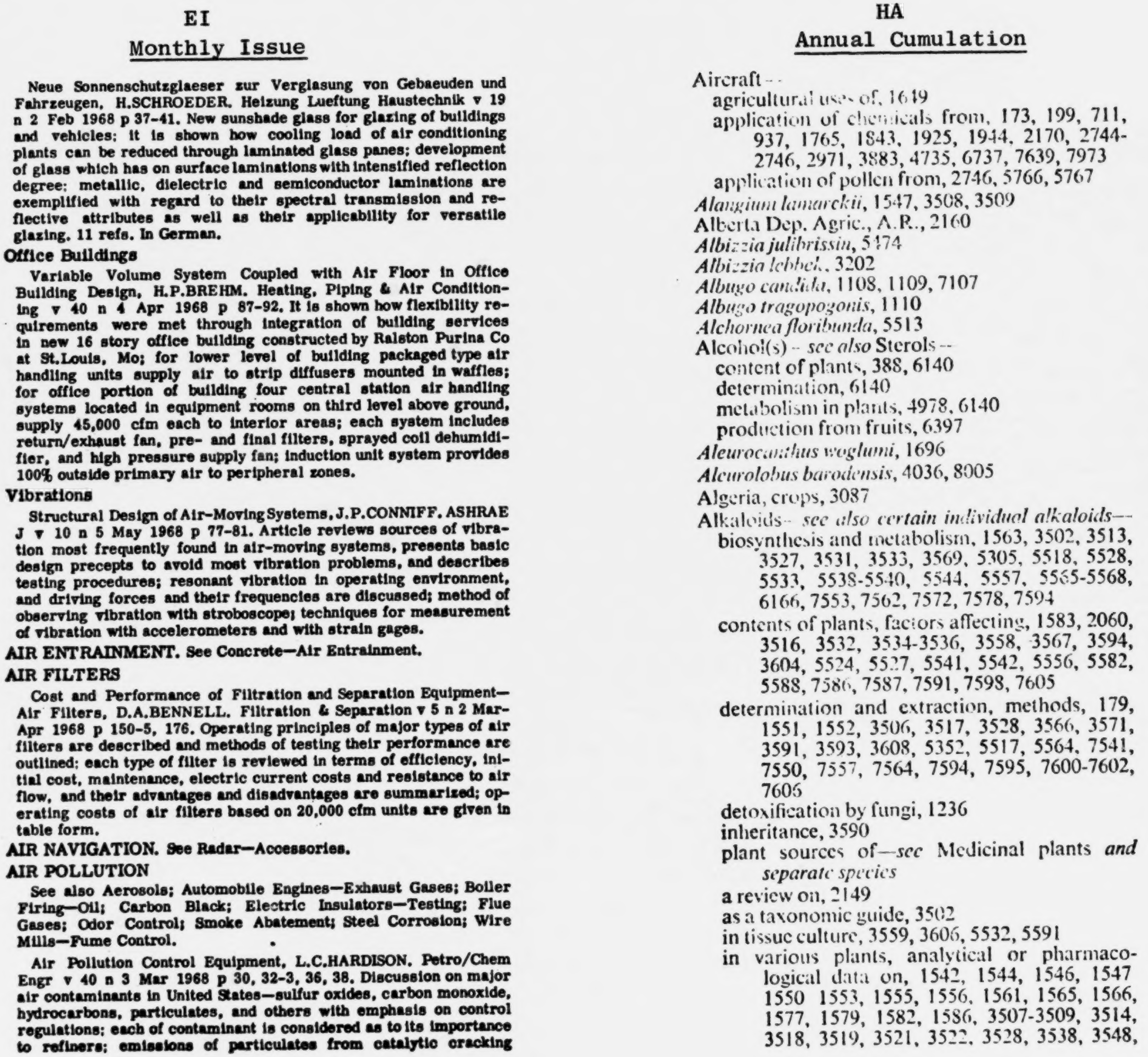

EI

Monthly Issue

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Office Buildings

Variable Volume System Coupled with Air Floor in Office Building Design, H.P.BREHM. Heating, Piping & Air Conditioning v 40 n 4 Apr 1968 p 87-92. It is shown how flexibility requirements were met through integration of building services in new 16 story office building constructed by Ralston Purina Co at St.Louis, Mo; for lower level of building packaged type air handling units supply air to strip diffusers mounted in waffles; for office portion of building four central station air handling systems located in equipment rooms on third level above ground, supply 45,000 cfm each to interior areas; each system includes return/exhaust fan, pre- and final filters, sprayed coil dehumidifier, and high pressure supply fan; induction unit system provides 100% outside primary air to peripheral zones.

Vibrations

Structural Design of Air-Moving Systems, J.P.CONNIFF. ASHRAE J v 10 n 5 May 1968 p 77-81. Article reviews sources of vibration most frequently found in air-moving systems, presents basic design precepts to avoid most vibration problems, and describes testing procedures; resonant vibration in operating environment, and driving forces and their frequencies are discussed; method of observing vibration with stroboscope; techniques for measurement of vibration with accelerometers and with strain gages.

AIR ENTRAINMENT. See Concrete—Air Entrainment.

AIR FILTERS

Cost and Performance of Filtration and Separation Equipment—Air Filters, D.A.BENNELL. Filtration & Separation v 5 n 2 Mar-Apr 1968 p 150-5, 176. Operating principles of major types of air filters are described and methods of testing their performance are outlined; each type of filter is reviewed in terms of efficiency, initial cost, maintenance, electric current costs and resistance to air flow, and their advantages and disadvantages are summarized; operating costs of air filters based on 20,000 cfm units are given in table form.

AIR NAVIGATION. See Radar—Accessories.

AIR POLLUTION

See also Aerosols; Automobile Engines—Exhaust Gases; Boiler Firing—Oil; Carbon Black; Electric Insulators—Testing; Flue Gases; Odor Control; Smoke Abatement; Steel Corrosion; Wire Mills—Fume Control.

Air Pollution Control Equipment, L.C.HARDISON. Petro/Chem Engr v 40 n 3 Mar 1968 p 30, 32-3, 36, 38. Discussion on major air contaminants in United States—sulfur oxides, carbon monoxide, hydrocarbons, particulates, and others with emphasis on control regulations; each of contaminant is considered as to its importance to refiners; emissions of particulates from catalytic cracking

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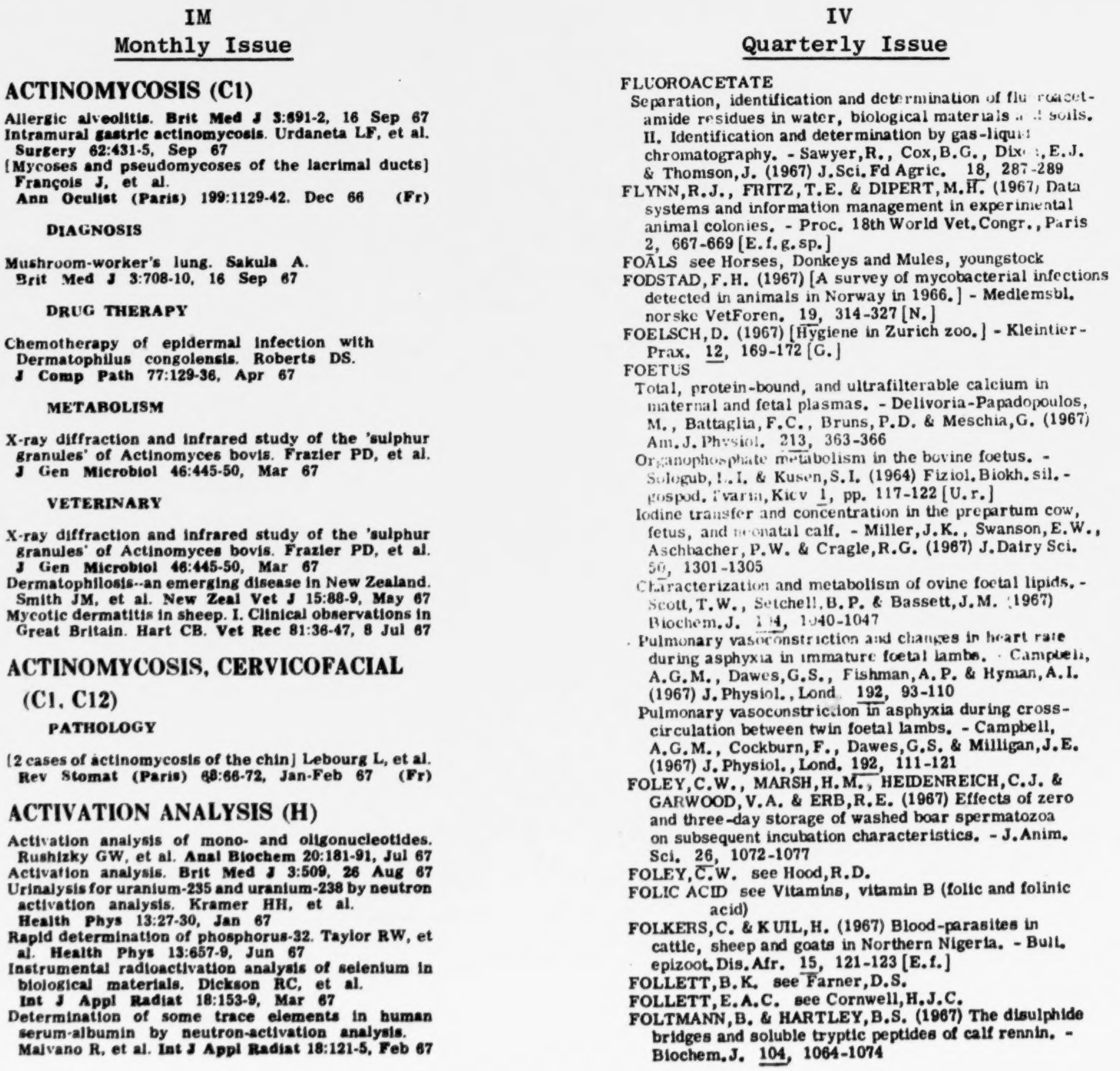

IM

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Intramural gastric actinomycosis. Urdaneta LF, et al.
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DIAGNOSIS

Mushroom-worker's lung. Sakula A.
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DRUG THERAPY

Chemotherapy of epidermal infection with Dermatophilus congolensis. Roberts DS.
J Comp Path 77:129-36, Apr 67

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J Gen Microbiol 46:445-50, Mar 67

VETERINARY

X-ray diffraction and infrared study of the 'sulphur granules' of Actinomyces bovis. Frazier PD, et al.
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Dermatophilosis--an emerging disease in New Zealand. Smith JM, et al. New Zeal Vet J 15:88-9, May 67
Mycotic dermatitis in sheep. I. Clinical observations in Great Britain. Hart CB. Vet Rec 81:36-47, 8 Jul 67

ACTINOMYCOSIS, CERVICOFACIAL (C1, C12)

PATHOLOGY

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ACTIVATION ANALYSIS (H)

Activation analysis of mono- and oligonucleotides. Rushizky GW, et al. Anal Biochem 20:181-91, Jul 67
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IV

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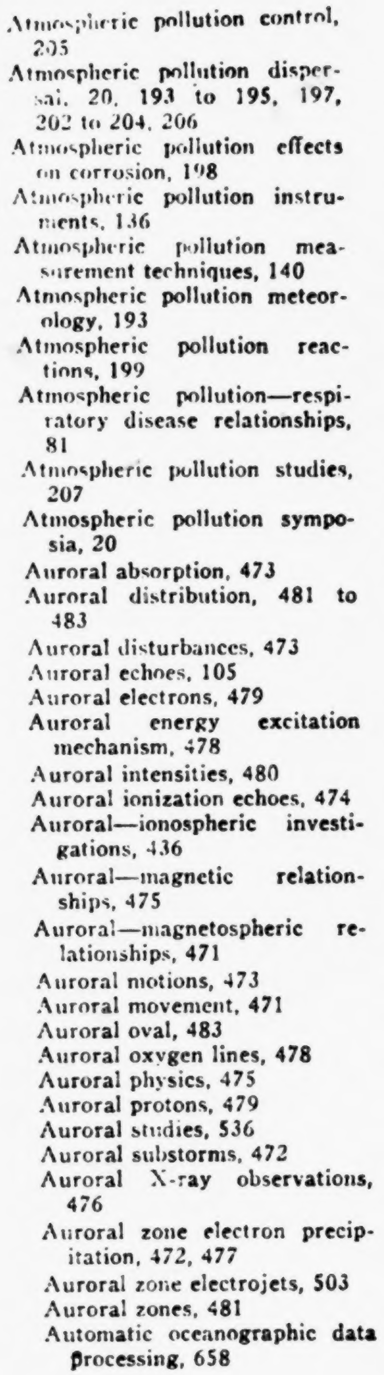

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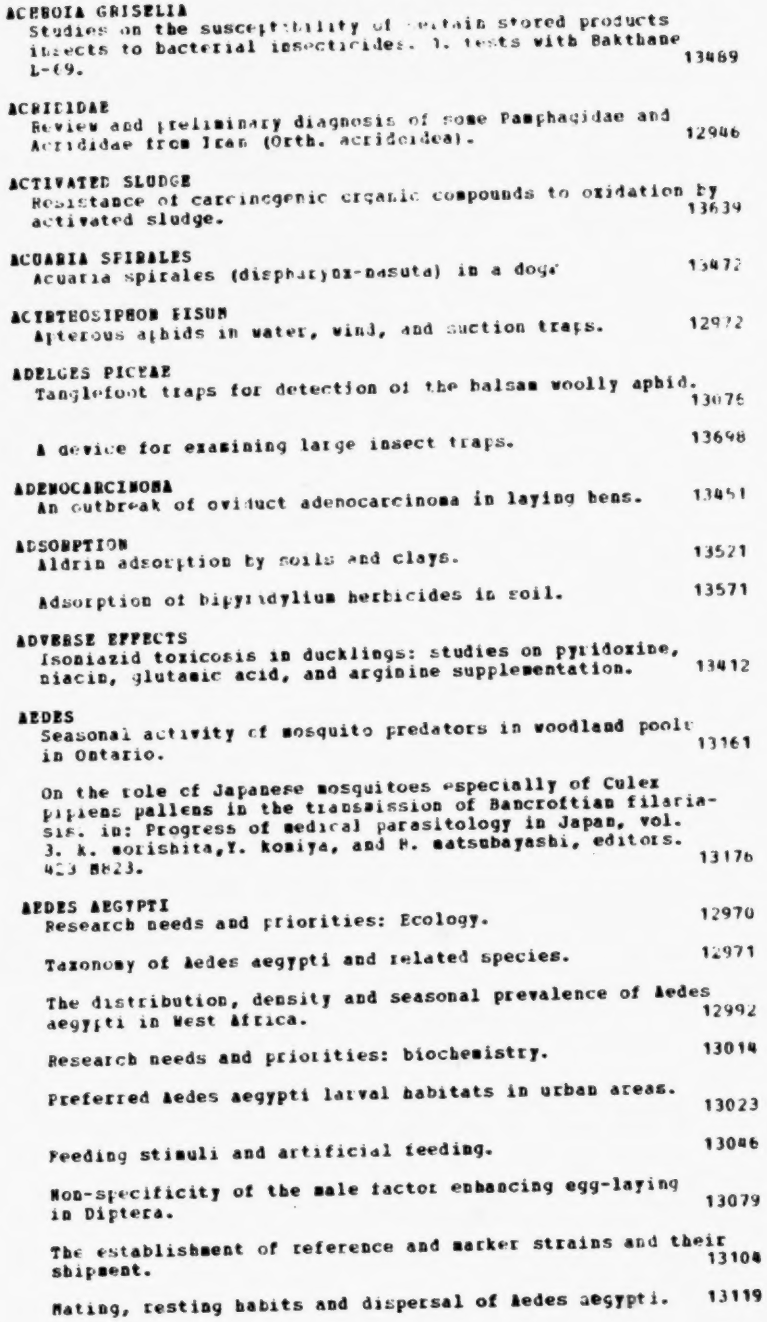

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On the role of Japanese mosquitoes especially of Culex pipiens pallens in the transmission of Bancroftian filariasis. in: Progress of medical parasitology in Japan, vol. 3. k. morishita, Y. komiya, and H. matsubayashi, editors. 423 8823. 13176

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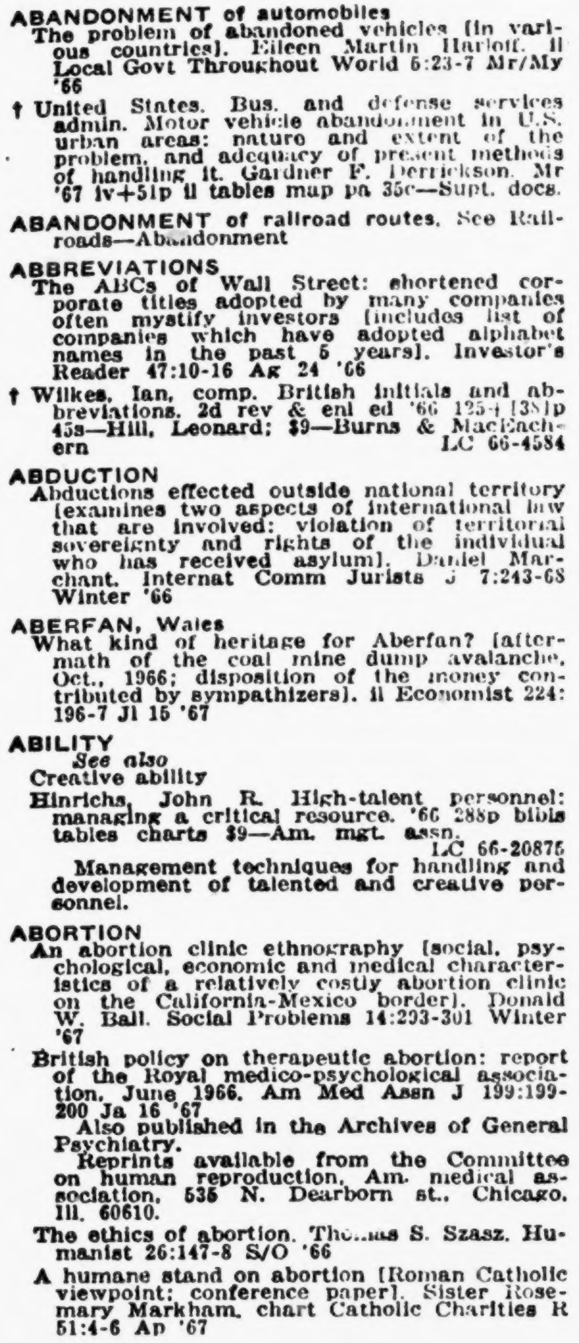

ABANDONMENT of automobiles
The problem of abandoned vehicles [in various countries]. Eileen Martin Harloff. il Local Govt Throughout World 6:23-7 Mr/My '66

† United States. Bus. and defense services admin. Motor vehicle abandonment in U.S. urban areas: nature and extent of the problem, and adequacy of present methods of handling it. Gardner F. Derrickson. Mr '67 iv+51p il tables map pa 35c—Supt. docs.

ABANDONMENT of railroad routes. See Railroads—Abandonment

ABBREVIATIONS
The ABCs of Wall Street: shortened corporate titles adopted by many companies often mystify investors [includes list of companies which have adopted alphabet names in the past 5 years]. Investor's Reader 47:10-16 Ag 24 '66

† Wilkes, Ian, comp. British initials and abbreviations. 2d rev & enl ed '66 125+[38]p 45s—Hill, Leonard; $9—Burns & MacEachern LC 66-4584

ABDUCTION
Abductions effected outside national territory [examines two aspects of international law that are involved: violation of territorial sovereignty and rights of the individual who has received asylum]. Daniel Marchant. Internat Comm Jurists J 7:243-68 Winter '66

ABERFAN, Wales
What kind of heritage for Aberfan? [aftermath of the coal mine dump avalanche, Oct., 1966; disposition of the money contributed by sympathizers]. il Economist 224: 196-7 Jl 15 '67

ABILITY
See also
Creative ability

Hinrichs, John R. High-talent personnel: managing a critical resource. '66 288p bibls tables charts $9—Am. mgt. assn. LC 66-20875

Management techniques for handling and development of talented and creative personnel.

ABORTION
An abortion clinic ethnography [social, psychological, economic and medical characteristics of a relatively costly abortion clinic on the California-Mexico border]. Donald W. Ball. Social Problems 14:293-301 Winter '67

British policy on therapeutic abortion: report of the Royal medico-psychological association, June 1966. Am Med Assn J 199:199-200 Ja 16 '67
Also published in the Archives of General Psychiatry.
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The ethics of abortion. Thomas S. Szasz. Humanist 26:147-8 S/O '66

A humane stand on abortion [Roman Catholic viewpoint; conference paper]. Sister Rosemary Markham. chart Catholic Charities R 51:4-6 Ap '67

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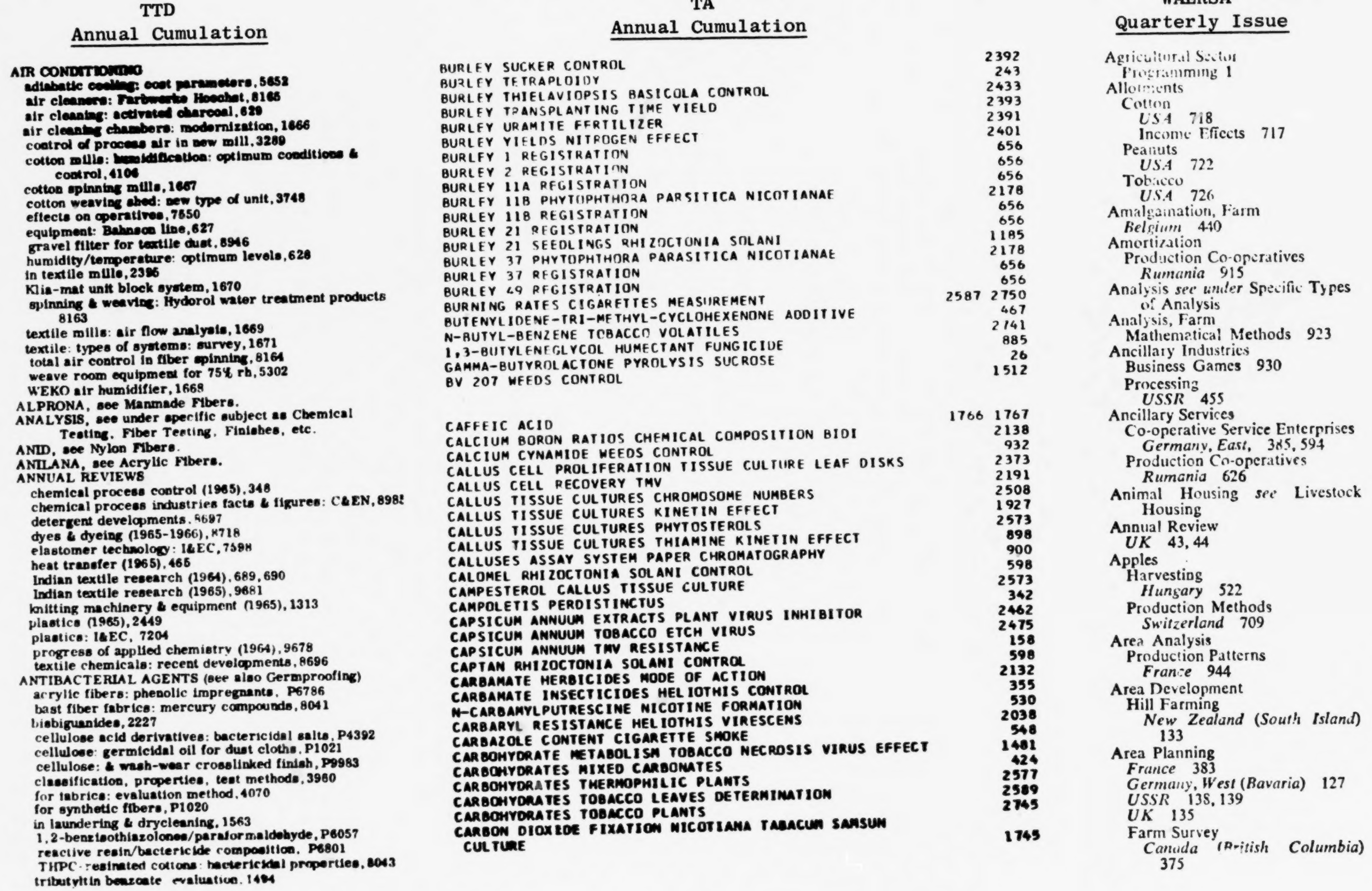

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BURNING RATES CIGARETTES MEASUREMENT	2587 2750
BUTENYLIDENE-TRI-METHYL-CYCLOHEXENONE ADDITIVE	467
N-BUTYL-BENZENE TOBACCO VOLATILES	2741
1,3-BUTYLENEGLYCOL HUMECTANT FUNGICIDE	885
GAMMA-BUTYROLACTONE PYROLYSIS SUCROSE	26
BV 207 WEEDS CONTROL	1512
CAFFEIC ACID	1766 1767
CALCIUM BORON RATIOS CHEMICAL COMPOSITION BIDI	2138
CALCIUM CYNAMIDE WEEDS CONTROL	932
CALLUS CELL PROLIFERATION TISSUE CULTURE LEAF DISKS	2373
CALLUS CELL RECOVERY TMV	2191
CALLUS TISSUE CULTURES CHROMOSOME NUMBERS	2508
CALLUS TISSUE CULTURES KINETIN EFFECT	1927
CALLUS TISSUE CULTURES PHYTOSTEROLS	2573
CALLUS TISSUE CULTURES THIAMINE KINETIN EFFECT	898
CALLUSES ASSAY SYSTEM PAPER CHROMATOGRAPHY	900
CALOMEL RHIZOCTONIA SOLANI CONTROL	598
CAMPESTEROL CALLUS TISSUE CULTURE	2573
CAMPOLETIS PERDISTINCTUS	342
CAPSICUM ANNUUM EXTRACTS PLANT VIRUS INHIBITOR	2462
CAPSICUM ANNUUM TOBACCO ETCH VIRUS	2475
CAPSICUM ANNUUM TMV RESISTANCE	158
CAPTAN RHIZOCTONIA SOLANI CONTROL	598
CARBAMATE HERBICIDES MODE OF ACTION	2132
CARBAMATE INSECTICIDES HELIOTHIS CONTROL	355
N-CARBAMYLPUTRESCINE NICOTINE FORMATION	530
CARBARYL RESISTANCE HELIOTHIS VIRESCENS	2038
CARBAZOLE CONTENT CIGARETTE SMOKE	548
CARBOHYDRATE METABOLISM TOBACCO NECROSIS VIRUS EFFECT	1481
CARBOHYDRATES MIXED CARBONATES	424
CARBOHYDRATES THERMOPHILIC PLANTS	2577
CARBOHYDRATES TOBACCO LEAVES DETERMINATION	2589
CARBOHYDRATES TOBACCO PLANTS	2745
CARBON DIOXIDE FIXATION NICOTIANA TABACUM SAMSUN CULTURE	1745

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  - Programming 1
- Allotments
  - Cotton
    - *USA* 718
    - Income Effects 717
  - Peanuts
    - *USA* 722
  - Tobacco
    - *USA* 726
- Amalgamation, Farm
  - *Belgium* 440
- Amortization
  - Production Co-operatives
    - *Rumania* 915
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- Analysis, Farm
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Fig. 2 (concluded)

Typical Examples of Subject Indexes of Each Service

B. DATA ELEMENTS USED IN THE PRINTED CITATION

There is wide variation in the numbers and combinations of elements of data that are included in the printed citations of each service. Direct comparison is difficult because of differing coverage; for example, a service which covers only English language material has no option regarding inclusion of a translated title.

Thirty-eight elements were identified, of which B of A uses 25. Other services use from 13 to 32, with the average number being 23. Inclusion of first and second authors, title in full, volume number, inclusive paging, and year are the elements common to all services. Data elements used by more than half of the other services but not by B of A include corporate author location, cross-reference to related citation, and price. A third of the services, but not B of A, also include author affiliation and article title in original foreign language.

Use of the data elements, as determined by examination of printed citations, can be seen in Table II.

The data elements and characteristics of the bibliographic records in corresponding computer files of bibliographic data for several of these services have been ifentified and described separately in a report by the Auerbach Corporation.

C. INDEXING AND ACCESS FEATURES PUBLISHED IN EACH ISSUE

1. Non-Subject Access

The non-subject access features provided in each printed issue by each of the services are summarized in Table III. Examples of author indexes for most of these services were given earlier in Fig. 1. Almost all services provided an author index with each issue, but few provided an author affiliation or address. More than half of the services provided access by corporate author, generally by including corporate authors in the author index. Organization names as subjects were given in subject indexes by some services. Only the two NAL publications provided separate organization indexes. Through 1967, B of A provided an Organization Index which included corporate names as authors or as subjects. Beginning in 1968, a separate corporate author index was provided, and organizations as subjects were included in the subject index. Beginning in late 1967, PDB provided a separate organization index covering corporate authors and sponsoring organizations.

None of the services provided a report number index, and only one service provided a patent number index. Nine of the services provided some indication of how copies of the cited materials could be obtained, usually by an introductory note announcing that copies could be obtained from a general source.

DATA ELEMENT	B of A	BA	BAI	CA	DSA	EI	FA	HA	IM	IV	MGA	PAIS	PDB	TA	TTD	WAERSA
	SERVICE															
Citation Number	x	x	--	x	x	--	x	x	--	--	x	--	x	x	x	x
Personal author, first or only	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Personal author, second	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Personal author, third	x	x	--	x	x	x	x	x	x	x	x	--	x	x	x	x
Personal author, fourth or more	x	x	--	x	x	x	--	--	--	x	--	--	x	x	x	--
Author note (e.g., Ed., Comp.)	x	x	dna[3]	x	x	x	x	x	dna	x	x	x	x	--	x	x
Author affiliation	--	x	--	x	x	--	--	--	--	--	x	--	x	--	x	--
Corporate author	x	x	--	x	x	--	x	x	dna	x	x	x	x	x	x	x
Corporate author location	--	x	--	x	x	--	x	--	dna	x	x	x	x	--	x	x
Book publisher name	x	x	dna	x	x	x	x	x	dna	x	x	x	x	x	x	x
Book publisher location	x	x	dna	x	x	x	x	x	dna	x	x	x	x	--	x	x
Federal contract or grant number	--	--	--	--	--	--	--	--	--	--	x	--	x	--	--	--
Title in full	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Title abbreviated or augmented	--	--	--	--	--	--	--	--	--	--	--	--	x	--	--	--
Book title in original foreign language	x	x	dna	x	x	x	x	x	dna	x	x	dna	--	x		x
Book title in translation	x	x	dna	x	x	--	x	x	dna	x	x	dna	x	x		x
Article title in original foreign language	--	x	dna	--	--	x	--	x	x	--	x	dna	--	--	--	x
Article title in translation	x	x	dna	x	x	--	x	x	x	x	x	dna	x	x	x	x
Serial title in full	--	--	--	--	--	--	--	--	--	--	x	--	--	--	--	--
Serial title abbreviated	x	x	x	x	x	x	x	x	x	x	--	x	x	x	x	x
Volume number	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Issue number	x	x	x	x	x	x	x	x	--	x	x	--	x	x	x	x
Year	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Month	x	--	x	--	--	x	--	--	x	--	x	x	x	x	x	--
Report number	x	x	dna	x	x	x	x	x	dna	--	x	x	--		x	x
Page numbers, inclusive	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Country of origin	--	--	--	--	x	--	--	--	--	--	x	x	--	--	--	x
Language of original	x	--	dna	x	x	x	x	x	x	x	--	dna	x	x	x	--
Language of summary	x	x	dna	--	x	--	x	x	--	x	x	dna	x	x	x	x
Note of references or illustrations	x	x	x	x	x	x	x	x	--	--	x	x	x	x	x	x
Associated index terms	--	--	--	--	--	--	--	--	--	--	x	--	x	--	--	--
Associated class. no. (e.g., UDC, MeSH)	--	--	--	--	--	--	x	--	x	--	x	--	x	--	--	--
Library call no.	x	--	--	--	--	--	--	--	--	--	--	--	x	--	--	--
Source of annotation	--	x	dna	x	x	--	--	x	dna	--	x	dna	--	x	x	x
Cross-reference to related citations	--	x	x	x	x	x	x	x	x	x	x	x	--	x	--	x
Source (e.g., CFSTI)	x	(1)	(2)	(1)	(1)	(1)	(1)	--	(1)	--	x	(2)	(1)	--	--	x
Price	--	x	dna	x	x	--	x	x	dna	x	x	x	--	--	x	x
Physical size	--	--	dna	--	--	--	--	x	dna	--	--	--	--	--	--	--

(1) Preface announces availability from central source
(2) Issues give publisher and price for each periodical
(3) This service covers journal articles only

Table II

Bibliographic Data Elements Used in the Published Versions of Selected Secondary Services Related to Agricultural R&D

Service	Author Index	Author Full Name Given	Organization Index (as Authors of Articles Indexed)	Report Number Index	Patent Number Index	Patent Concordance	Note of Library Where the Publications can be Found	Other Features
B of A	X	-	X[4,5]	-	-	-	X	
BA	X	-	in author index	-	-	-	-	
BAI	-	-	-[4]	-	-	-	-	
CA	X	when available	in author index[4]	-	X	X	X	
DSA	X	for women	in author index	-	-	-	X	Review articles
EI	X	-	-	-	-	-	-	
FA	X[1]	-	-	-	-	-	X	Review articles
HA	X	-	in author index	-	-	-	-	
IM	X[1]	-	-[4]	-	-	-	X	Bibliography of Medical Reviews
IV	X[1,2]	-	-[4]	-	-	-	-	
MGA	X[1]	-	in author index	-	-	-	X	
PDB	X	-	X[4]	-	-	-	X	Biographical Index with affiliation
PAIS	-	-	-[4]	-	-	-	X	Publications Analyzed; Directory of Publishers and Organizations
TTD	X	-	in author index	-	-[3]	-	X	
TA	X	-	in author index	-	-[3]	-	-	
WAERSA	X	-	in author index[4]	-	-	-	-	Review articles

1. Citation given under senior author, cross-references under junior authors.
2. Author index merged with subject index.
3. None, but all patent abstracts grouped together.
4. Organizations as subjects given in subject index.
5. Through 1967 organization index included organizations as subjects.

Table III

Indexing and Access Features (Non-Subject) Provided with Each Issue of Selected Secondary Services

2. Subject Access

The basic styles and formats of subject indexes of these services were illustrated earlier in Fig. 2. Details of the subject access features provided with each issue of each of the services are given in Table IV. Several of the services include cross-reference statements in the index. A few of the services have a subject index separate from the citations, and directly yield only a reference number, as shown in the samples from B of A, BA Biosystematic and CROSS, CA, MGA, and WAERSA in Fig. 2; and two services have indexes of the same general type that directly yield a brief citation instead of a reference number (see the samples from BA B.A.S.I.C. and PDB in Fig. 2). Seven of the services simply list the full citation under a single subject access point, in the manner of a classified bibliography.

D. INDEXING AND ACCESS FEATURES PUBLISHED ANNUALLY OR CUMULATIVELY

1. Non-Subject Access

Two of the services (IV, PDB) provide no annual indexes or cumulations.* One service (CA) cumulates semi-annually and quinquennially only. All but four of the services provide annual author indexes, with generally less than the full name, and never with any indication of the author's affiliation or address. Those services which provide corporate author indexing in their monthly issues, a majority, provide such indexing annually. None of these services provide an annual report number index, and only one of them provides a patent number index. Several other special features are provided in cumulations, notably the cumulative Translations Index of MGA and Bibliography of Medical Reviews of IM. Fig. 3 includes examples of these special indexes. Details for the non-subject access features for each of the services are given in Table V.

2. Subject Access

Some of the services cumulate the subject indexes from single issues; others provide only an annual index. Only one service (CA) regularly cumulates subject indexes over a period longer than annual. One other service (HA) has published a cumulated index for 1931-1960.

Most of the services which have an annual subject index post a reference number under one or more subject access points. Four services

---

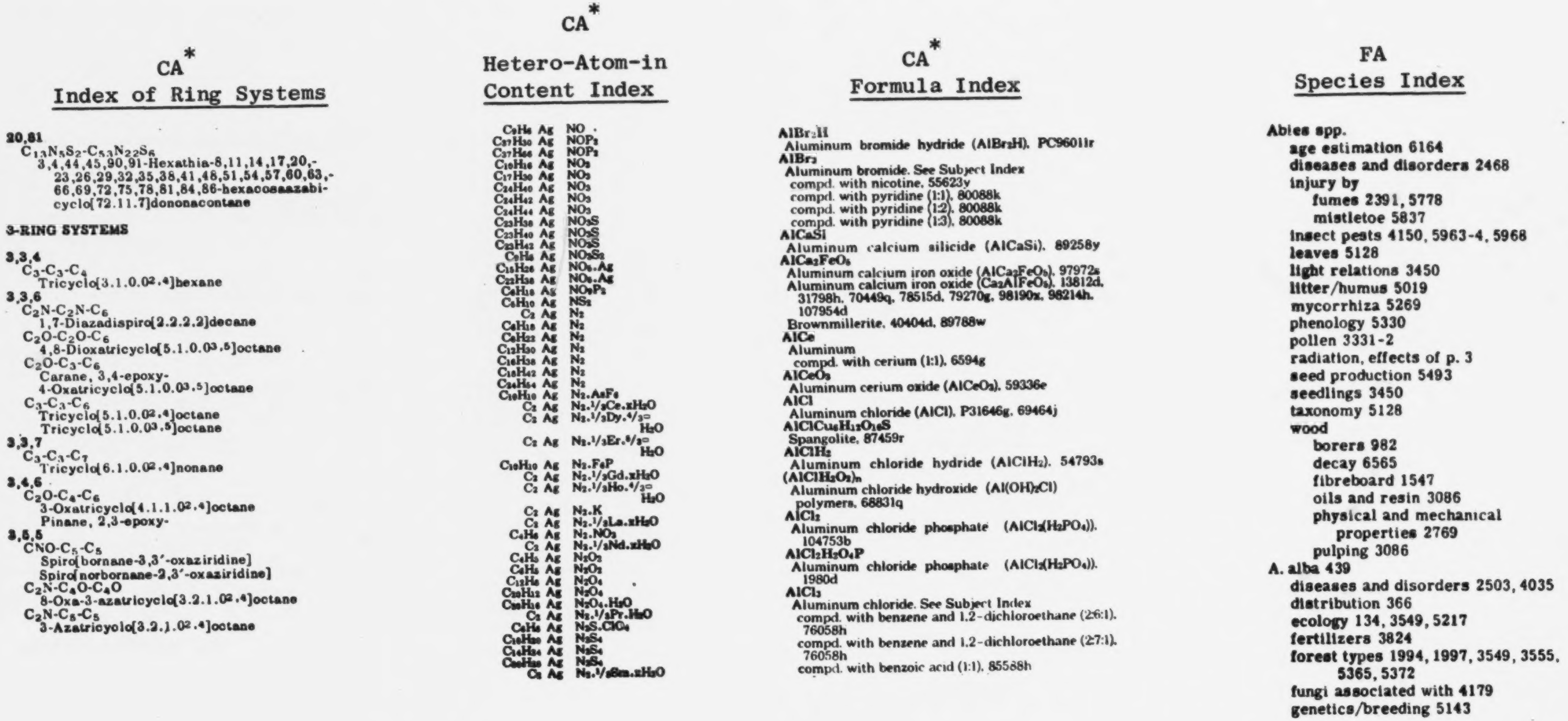
* Since the completion of this study, NAL has announced the publication of the first semi-annual Cumulative Index to PDB, to cover the January 1 to June 7, 1968 issues.

Service	Subject Index		Complete Citations Grouped Under Subject Headings		Cross-Reference Statements Supplied	Other Features
	Yielding Only a Reference Number	Yielding a Brief Citation	Under One Access Point Only	Under One or More Access Points		
B of A	X	-	X	-	X	
BA	CROSS, Biosystematic	B.A.S.I.C.[1]	X	-	-	
BAI	-	-	-	X	X	
CA	X	-	X	-	X	
DSA	-	-	X	-	-	
EI	-	-	X	-	X	
FA	-	-	X	-	-	
HA	-	-	X	-	-	
IM	-	-	-	X	-	
IV	-	-	-	X	X	
MGA	X	-	X	-	X	Geographic index
PDB	-	X	X	-	-	
PAIS	-	-	-	X	X	
TTD	-	-	X	-	-	
TA	-	-	X	-	-	
WAERSA	X	-	X	-	X	Geographic index

1. Published under separate cover

Table IV

Subject Access Features Provided With Each Issue of Selected Secondary Services



CA*

Index of Ring Systems

20,81
$C_{13}N_5S_2$-$C_{53}N_{22}S_6$
3,4,44,45,90,91-Hexathia-8,11,14,17,20,-23,26,29,32,35,38,41,48,51,54,57,60,63,-66,69,72,75,78,81,84,86-hexacosaazabicyclo[72.11.7]dononacontane

3-RING SYSTEMS

3,3,4
C_3-C_3-C_4
Tricyclo$[3.1.0.0^{2,4}]$hexane
3,3,6
C_2N-C_2N-C_6
1,7-Diazadispiro[2.2.2.2]decane
C_2O-C_2O-C_6
4,8-Dioxatricyclo$[5.1.0.0^{3,5}]$octane
C_2O-C_3-C_6
Carane, 3,4-epoxy-
4-Oxatricyclo$[5.1.0.0^{3,5}]$octane
C_3-C_3-C_6
Tricyclo$[5.1.0.0^{2,4}]$octane
Tricyclo$[5.1.0.0^{3,5}]$octane
3,3,7
C_3-C_3-C_7
Tricyclo$[6.1.0.0^{2,4}]$nonane
3,4,6
C_2O-C_4-C_6
3-Oxatricyclo$[4.1.1.0^{2,4}]$octane
Pinane, 2,3-epoxy-
3,5,5
CNO-C_5-C_5
Spiro[bornane-3,3′-oxaziridine]
Spiro[norbornane-2,3′-oxaziridine]
C_2N-C_4O-C_4O
8-Oxa-3-azatricyclo$[3.2.1.0^{2,4}]$octane
C_2N-C_5-C_5
3-Azatricyclo$[3.2.1.0^{2,4}]$octane

CA*

Hetero-Atom-in Content Index

C_9H_6 Ag NO
$C_{37}H_{30}$ Ag NOP_2
$C_{37}H_{66}$ Ag NOP_2
$C_{10}H_{16}$ Ag NO_3
$C_{17}H_{30}$ Ag NO_3
$C_{24}H_{40}$ Ag NO_3
$C_{24}H_{42}$ Ag NO_3
$C_{24}H_{44}$ Ag NO_3
$C_{23}H_{38}$ Ag NO_3S
$C_{23}H_{40}$ Ag NO_3S
$C_{23}H_{42}$ Ag NO_3S
C_9H_6 Ag NO_3S_2
$C_{15}H_{26}$ Ag $NO_6.Ag$
$C_{22}H_{38}$ Ag $NO_6.Ag$
C_6H_{18} Ag NO_9P_2
C_6H_{10} Ag NS_2
C_2 Ag N_2
C_6H_{18} Ag N_2
C_6H_{22} Ag N_2
$C_{12}H_{30}$ Ag N_2
$C_{16}H_{38}$ Ag N_2
$C_{18}H_{42}$ Ag N_2
$C_{24}H_{54}$ Ag N_2
$C_{10}H_{10}$ Ag $N_2.AsF_6$
C_2 Ag $N_2.{}^1/_3Ce.xH_2O$
C_2 Ag $N_2.{}^1/_3Dy.{}^4/_3 H_2O$
C_2 Ag $N_2.{}^1/_3Er.{}^8/_3 H_2O$
$C_{10}H_{10}$ Ag $N_2.FeP$
C_2 Ag $N_2.{}^1/_3Gd.xH_2O$
C_2 Ag $N_2.{}^1/_3Ho.{}^4/_3 H_2O$
C_2 Ag $N_2.K$
C_2 Ag $N_2.{}^1/_3La.xH_2O$
C_4H_6 Ag $N_2.NO_3$
C_2 Ag $N_2.{}^1/_3Nd.xH_2O$
C_4H_5 Ag N_2O_2
C_6H_5 Ag N_2O_2
$C_{12}H_8$ Ag N_2O_4
$C_{20}H_{12}$ Ag N_2O_4
$C_{20}H_{16}$ Ag $N_2O_4.H_2O$
C_2 Ag $N_2.{}^1/_3Pr.H_2O$
C_6H_6 Ag $N_2S.ClO_4$
$C_{10}H_{20}$ Ag N_2S_4
$C_{14}H_{24}$ Ag N_2S_4
$C_{20}H_{38}$ Ag N_2S_4
C_2 Ag $N_2.{}^1/_3Sm.xH_2O$

CA*

Formula Index

$AlBr_2H$
Aluminum bromide hydride ($AlBr_2H$). PC96011r
$AlBr_3$
Aluminum bromide. See Subject Index
compd. with nicotine, 55623y
compd. with pyridine (1:1), 80088k
compd. with pyridine (1:2), 80088k
compd. with pyridine (1:3), 80088k
$AlCaSi$
Aluminum calcium silicide ($AlCaSi$). 89258y
$AlCa_2FeO_5$
Aluminum calcium iron oxide ($AlCa_2FeO_5$). 97972s
Aluminum calcium iron oxide (Ca_2AlFeO_5). 13812d. 31798h. 70449q. 78515d. 79270g. 98190x. 98214h. 107954d
Brownmillerite. 40404d. 89788w
$AlCe$
Aluminum
compd. with cerium (1:1). 6594g
$AlCeO_3$
Aluminum cerium oxide ($AlCeO_3$). 59336e
$AlCl$
Aluminum chloride ($AlCl$). P31646g. 69464j
$AlClCu_6H_{12}O_{16}S$
Spangolite, 87459r
$AlClH_2$
Aluminum chloride hydride ($AlClH_2$). 54793s
$(AlClH_2O_2)_n$
Aluminum chloride hydroxide ($Al(OH)_2Cl$) polymers, 68831q
$AlCl_2$
Aluminum chloride phosphate ($AlCl_2(H_2PO_4)$). 104753b
$AlCl_2H_2O_4P$
Aluminum chloride phosphate ($AlCl_2(H_2PO_4)$). 1980d
$AlCl_3$
Aluminum chloride. See Subject Index
compd. with benzene and 1,2-dichloroethane (2:6:1). 76058h
compd. with benzene and 1,2-dichloroethane (2:7:1). 76058h
compd. with benzoic acid (1:1). 85588h

FA

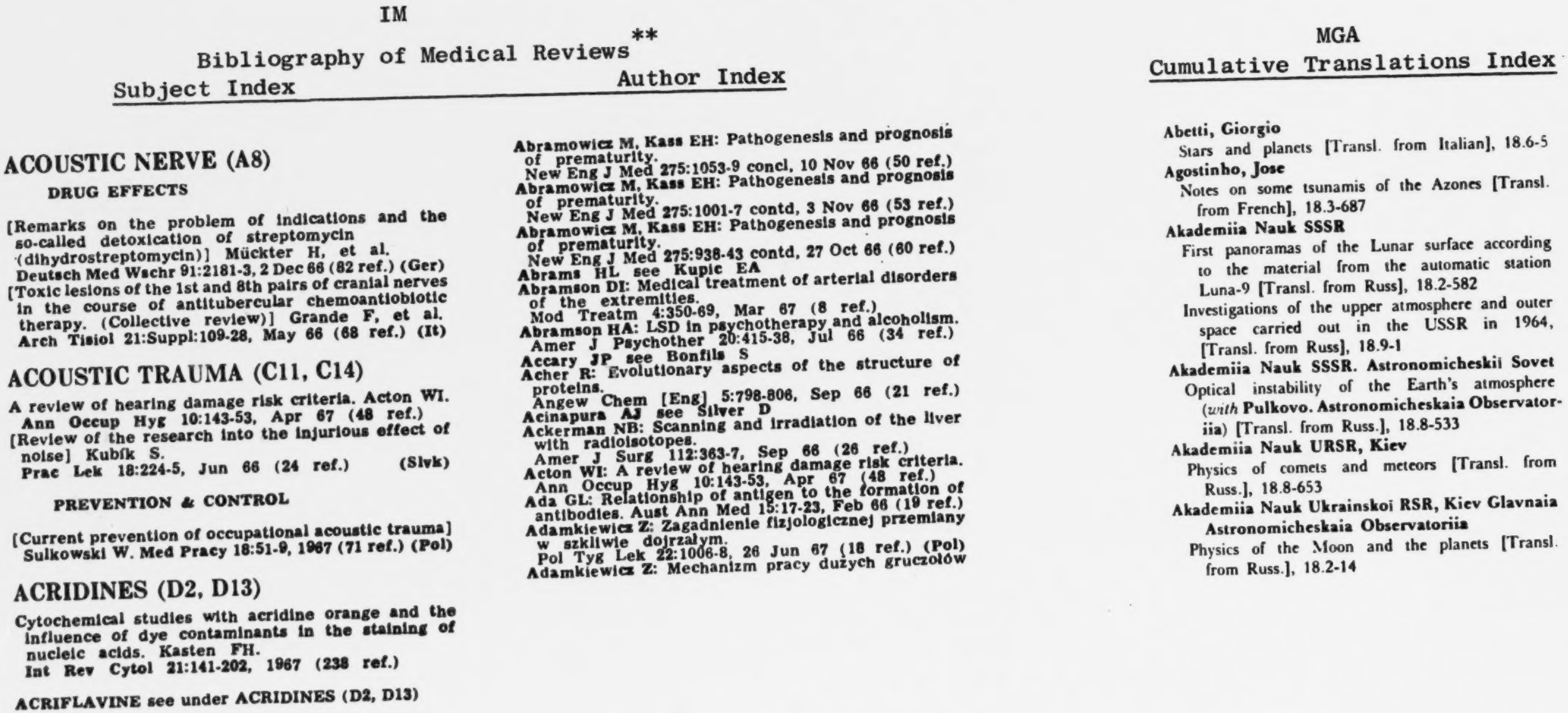
Species Index

Abies spp.
age estimation 6164
diseases and disorders 2468
injury by
fumes 2391, 5778
mistletoe 5837
insect pests 4150, 5963-4, 5968
leaves 5128
light relations 3450
litter/humus 5019
mycorrhiza 5269
phenology 5330
pollen 3331-2
radiation, effects of p. 3
seed production 5493
seedlings 3450
taxonomy 5128
wood
borers 982
decay 6565
fibreboard 1547
oils and resin 3086
physical and mechanical properties 2769
pulping 3086
A. alba 439
diseases and disorders 2503, 4035
distribution 366
ecology 134, 3549, 5217
fertilizers 3824
forest types 1994, 1997, 3549, 3555, 5365, 5372
fungi associated with 4179
genetics/breeding 5143

*Provided semiannually and quinquennially.

Fig. 3

Examples of Sepecialty Indexes Provided Annually



IM

Bibliography of Medical Reviews**

Subject Index

ACOUSTIC NERVE (A8)

DRUG EFFECTS

[Remarks on the problem of indications and the so-called detoxication of streptomycin (dihydrostreptomycin)] Mückter H, et al.
Deutsch Med Wschr 91:2181-3, 2 Dec 66 (82 ref.) (Ger)

[Toxic lesions of the 1st and 8th pairs of cranial nerves in the course of antitubercular chemoantiobiotic therapy. (Collective review)] Grande F, et al.
Arch Tisiol 21:Suppl:109-28, May 66 (68 ref.) (It)

ACOUSTIC TRAUMA (C11, C14)

A review of hearing damage risk criteria. Acton WI.
Ann Occup Hyg 10:143-53, Apr 67 (48 ref.)

[Review of the research into the injurious effect of noise] Kubík S.
Prac Lek 18:224-5, Jun 66 (24 ref.) (Slvk)

PREVENTION & CONTROL

[Current prevention of occupational acoustic trauma] Sulkowski W. Med Pracy 18:51-9, 1967 (71 ref.) (Pol)

ACRIDINES (D2, D13)

Cytochemical studies with acridine orange and the influence of dye contaminants in the staining of nucleic acids. Kasten FH.
Int Rev Cytol 21:141-202, 1967 (238 ref.)

ACRIFLAVINE see under ACRIDINES (D2, D13)

Author Index

Abramowicz M, Kass EH: Pathogenesis and prognosis of prematurity.
New Eng J Med 275:1053-9 concl, 10 Nov 66 (50 ref.)
Abramowicz M, Kass EH: Pathogenesis and prognosis of prematurity.
New Eng J Med 275:1001-7 contd, 3 Nov 66 (53 ref.)
Abramowicz M, Kass EH: Pathogenesis and prognosis of prematurity.
New Eng J Med 275:938-43 contd, 27 Oct 66 (60 ref.)
Abrams HL see Kupic EA
Abramson DI: Medical treatment of arterial disorders of the extremities.
Mod Treatm 4:350-69, Mar 67 (8 ref.)
Abramson HA: LSD in psychotherapy and alcoholism.
Amer J Psychother 20:415-38, Jul 66 (34 ref.)
Accary JP see Bonfils S
Acher R: Evolutionary aspects of the structure of proteins.
Angew Chem [Eng] 5:798-806, Sep 66 (21 ref.)
Acinapura AJ see Silver D
Ackerman NB: Scanning and irradiation of the liver with radioisotopes.
Amer J Surg 112:363-7, Sep 66 (26 ref.)
Acton WI: A review of hearing damage risk criteria.
Ann Occup Hyg 10:143-53, Apr 67 (48 ref.)
Ada GL: Relationship of antigen to the formation of antibodies. Aust Ann Med 15:17-23, Feb 66 (19 ref.)
Adamkiewicz Z: Zagadnienie fizjologicznej przemiany w szkliwie dojrzałym.
Pol Tyg Lek 22:1006-8, 26 Jun 67 (18 ref.) (Pol)
Adamkiewicz Z: Mechanizm pracy dużych gruczołów

MGA

Cumulative Translations Index

Abetti, Giorgio
Stars and planets [Transl. from Italian], 18.6-5
Agostinho, Jose
Notes on some tsunamis of the Azones [Transl. from French], 18.3-687
Akademiia Nauk SSSR
First panoramas of the Lunar surface according to the material from the automatic station Luna-9 [Transl. from Russ], 18.2-582
Investigations of the upper atmosphere and outer space carried out in the USSR in 1964, [Transl. from Russ], 18.9-1
Akademiia Nauk SSSR. Astronomicheskii Sovet
Optical instability of the Earth's atmosphere (*with* **Pulkovo. Astronomicheskaia Observatoriia**) [Transl. from Russ.], 18.8-533
Akademiia Nauk URSR, Kiev
Physics of comets and meteors [Transl. from Russ.], 18.8-653
Akademiia Nauk Ukrainskoi RSR, Kiev Glavnaia Astronomicheskaia Observatoriia
Physics of the Moon and the planets [Transl. from Russ.], 18.2-14

**Also provided monthly

Fig. 3 (concluded)

Examples of Specialty Indexes Provided Annually

Service	Author Index	Author Full Name Given	Organization Index (as Authors of Articles Indexed)	Report Number Index	Patent Number Index	Patent Concordance	Note of Library Where the Publications can be Found	List of Publications Covered	Other Features
B of A	X	-	X[4,5]	-	-	-	X	-	
BA	X	-	in author index[4]	-	-	-	-	separate publication	
BAI	-	-	-[4]	-	-	-	-	X	
CA	X[1]	when available	in author index[4]	-	X	X	-[6]	separate publication	
DSA	X	for women	in author index[4]	-	-	-	X	X	
EI	X	-	-	-	-	-	X	periodical and serial publications only	
FA	X[2]	-	-	-	-	-	-[6]	-	
HA	X	-	in author index[4]	-	-	-	-	-	
IM	up to three authors[1]	-	-[4]	-	-	-	X	X	List of Medical Subject Headings; Bibliography of Medical Reviews
IV	no cumulations								
MGA	X[1]	when available	in author index	contracts grants	-	-	-[6]	selected list	Cumulative Translations Index
PDB	no cumulations[3]								
PAIS	-	-	-[4]	-	-	-	X	X	Publications Analyzed; Directory of Publishers and Organizations
TTD	X	-	in author index	-	-	-	X	-	
TA	X	-	in author index	-	-	-	-	-	
WAERSA	X	-	in author index[4]	-	-	-	-	X	

1. Citation under senior author only, cross-reference under junior authors.
2. Reference number under senior author, cross-reference under junior authors.
3. Semi-annual cumulative index announced after completion of this study.
4. Organizations as subject given in subject index.
5. Through 1967 organization index included organizations as subjects.
6. CA includes holdings in List of Periodicals Abstracted; FA and MGA give location with abstract.

Table V

Indexing and Access Features (Non-Subject) Provided Annually and Cumulatively by Selected Secondary Services publish the complete citation in the cumulations. Almost all of the services included cross-reference statements. Some of the special indexes included in annual indexes and cumulations are special subject indexes, notably the following:

Formula Index (CA)
Index of Ring Systems (CA)
Hetero-Atom-in-Context Index (CA)
Species Index (FA)
Geographic indexes (FA, MGA, WAERSA)

Examples of some of these are included in Fig. 3. Details of the subject access features provided annually and cumulatively for each of the services are given in Table VI.

E. AN EXAMPLE OF THE INDEXING GIVEN TO THE SAME DOCUMENT BY SEVEN SERVICES

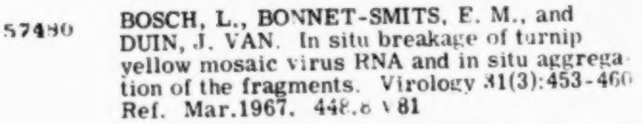
One specific example of the variation in format and extent of indexing treatment given by the various services is given by the citation shown in Fig. 4. This illustration shows the indexing provided by seven different services for the same journal article.

Service	Frequency	Subject Index		Complete Citations Cumulated Under Subject Headings		Cross-Reference Statements Supplied	Other Features
		Yields Only a Reference Number	Yields a Brief Citation	Under One Access Point Only	Under One or More Access Points		
B of A	Annual^2	X	-	-	-	X	
BA	Annual^2	Biosystematic, CROSS	B.A.S.I.C.	-	-	-	
BAI	-	-	-	-	qtly, annual	X	
CA	Semiannual Quinquennial^2	X	-	-	-	X	Formula Index, Index of Ring Systems, Hetero-Atom-in-Context Index (HAIC)
DSA	Annual	X	-	-	-	X	
EI	-	-	-	annual	-	X	
FA	Annual	X	-	-	-	X	Species Index, Geographic index
HA	Annual	X	-	-	-	X	Cumulated Index 1931-1960
IM	-	-	-	-	annual	X	
IV	no cumulations						
MGA	Annual^2	-	Yields author and reference no.	-	-	X	Geographic index
PDB	no cumulations^1						
PAIS	-	-	-	-	4 a year;annual	X	
TTD	Annual	X	-	-	-	X	
TA	Annual	X	-	-	-	-	
WAERSA	Annual^2	X	-	-	-	X	Geographic index

1. Semiannual cumulative index announced after the completion of this study
2. Cumulated from subject indexes in each issue

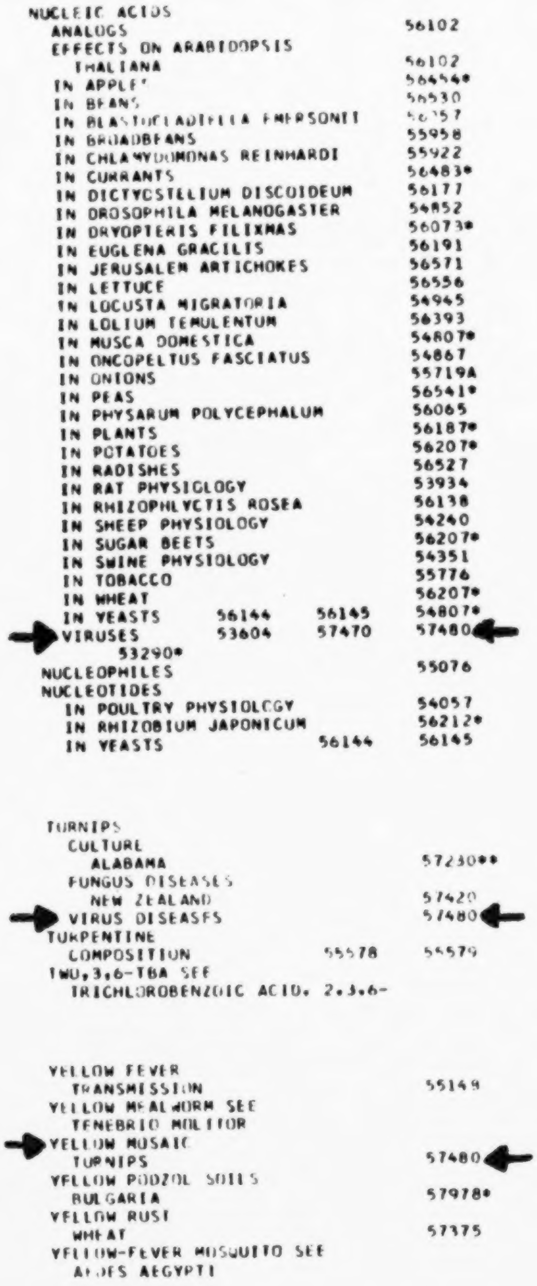
Table VI
Subject Access Features Provided Annually and Cumulatively by Selected Secondary Services

B of A
Citation
Monthly Issue



57480 BOSCH, L., BONNET-SMITS, E. M., and DUIN, J. VAN. In situ breakage of turnip yellow mosaic virus RNA and in situ aggregation of the fragments. Virology 31(3):453-460 Ref. Mar.1967. 448.8 V81

B of A
Subject Index
Monthly Issue



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NUCLEIC ACIDS
  ANALOGS                                       56102
  EFFECTS ON ARABIDOPSIS
    THALIANA                                    56102
   IN APPLES                                    56454*
   IN BEANS                                     56530
   IN BLASTOCLADIELLA EMERSONII                 56157
   IN BROADBEANS                                55958
   IN CHLAMYDOMONAS REINHARDI                   55922
   IN CURRANTS                                  56483*
   IN DICTYOSTELIUM DISCOIDEUM                  56177
   IN DROSOPHILA MELANOGASTER                   54852
   IN DRYOPTERIS FILIXMAS                       56073*
   IN EUGLENA GRACILIS                          56191
   IN JERUSALEM ARTICHOKES                      56571
   IN LETTUCE                                   56556
   IN LOCUSTA MIGRATORIA                        54945
   IN LOLIUM TEMULENTUM                         56393
   IN MUSCA DOMESTICA                           54807*
   IN ONCOPELTUS FASCIATUS                      54867
   IN ONIONS                                    55719A
   IN PEAS                                      56541*
   IN PHYSARUM POLYCEPHALUM                     56065
   IN PLANTS                                    56187*
   IN POTATOES                                  56207*
   IN RADISHES                                  56527
   IN RAT PHYSIOLOGY                            53934
   IN RHIZOPHLYCTIS ROSEA                       56138
   IN SHEEP PHYSIOLOGY                          54240
   IN SUGAR BEETS                               56207*
   IN SWINE PHYSIOLOGY                          54351
   IN TOBACCO                                   55776
   IN WHEAT                                     56207*
   IN YEASTS          56144        56145        54807*
   VIRUSES            53604        57470        57480
        53290*
 NUCLEOPHILES                                   55076
 NUCLEOTIDES
   IN POULTRY PHYSIOLOGY                        54057
   IN RHIZOBIUM JAPONICUM                       56212*
   IN YEASTS                       56144        56145


TURNIPS
  CULTURE
    ALABAMA                                     57230**
  FUNGUS DISEASES
    NEW ZEALAND                                 57420
  VIRUS DISEASES                                57480
TURPENTINE
  COMPOSITION                      55578        55579
TWO,3,6-TBA SEE
  TRICHLOROBENZOIC ACID, 2,3,6-


YELLOW FEVER
  TRANSMISSION                                  55149
YELLOW MEALWORM SEE
  TENEBRIO MOLITOR
YELLOW MOSAIC
  TURNIPS                                       57480
YELLOW PODZOL SOILS
  BULGARIA                                      57978*
YELLOW RUST
  WHEAT                                         57375
YELLOW-FEVER MOSQUITO SEE
  AEDES AEGYPTI
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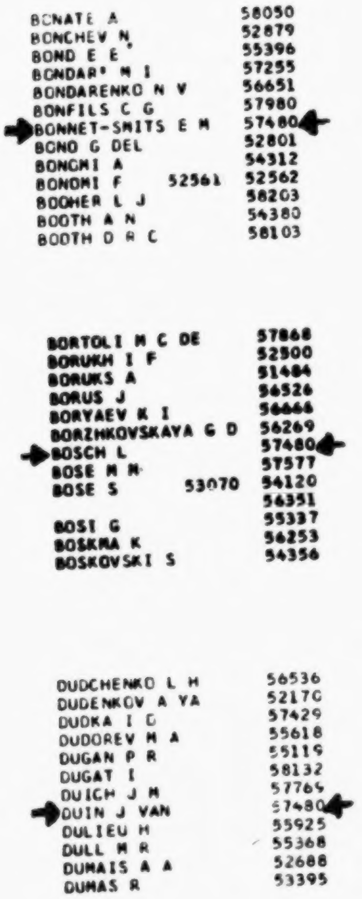
Author Index
Monthly Issue



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BONCHEV N                     52879
BOND E E                      55396
BONDAR' M I                   57255
BONDARENKO N V                56651
BONFILS C G                   57980
BONNET-SMITS E M              57480
BONO G DEL                    52801
BONOMI A                      54312
BONOMI F           52561      52562
BOOHER L J                    58203
BOOTH A N                     54380
BOOTH D R C                   58103


BORTOLI M C DE                57868
BORUKH I F                    52500
BORUKS A                      51484
BORUS J                       56526
BORYAEV K I                   56666
BORZHKOVSKAYA G D             56269
BOSCH L                       57480
BOSE M M                      57577
BOSE S             53070      54120
                              56351
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BOSKMA K                      56253
BOSKOVSKI S                   54356


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DUDOREV M A                   55618
DUGAN P R                     55119
DUGAT I                       58132
DUICH J M                     57764
DUIN J VAN                    57480
DULIEU H                      55925
DULL M R                      55368
DUMAIS A A                    52688
DUMAS R                       53395
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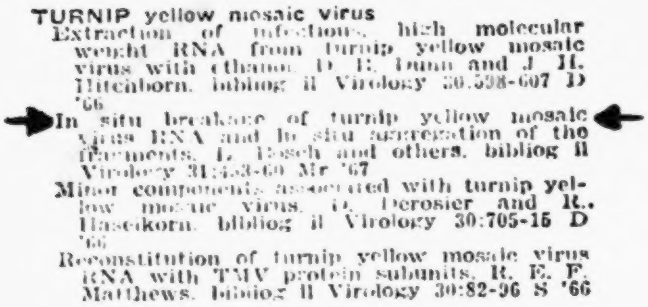
Fig. 4

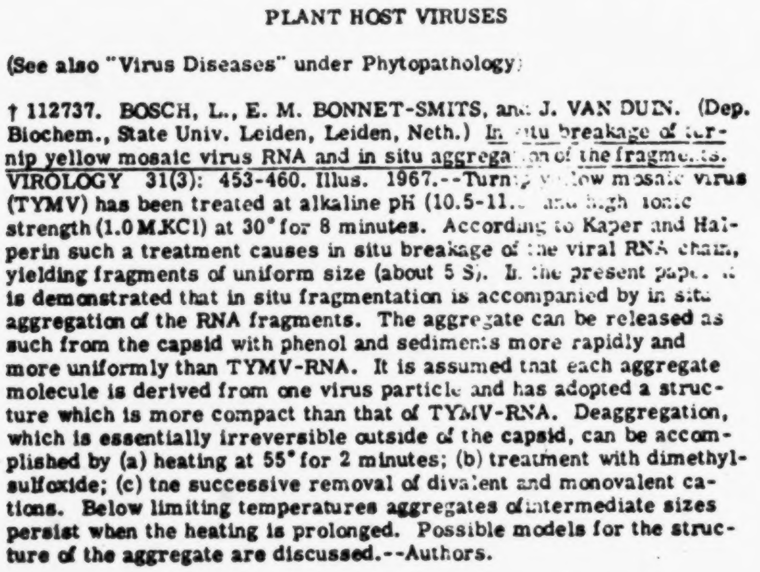
Indexing Applied to One Document by Seven Services

BAI
Annual Cumulation



TURNIP yellow mosaic virus
Extraction of infectious, high molecular weight RNA from turnip yellow mosaic virus with ethanol. D. B. Dunn and J. H. Hitchborn. bibliog il Virology 30:598-607 D '66
In situ breakage of turnip yellow mosaic virus RNA and in situ aggregation of the fragments. L. Bosch and others. bibliog il Virology 31:453-60 Mr '67
Minor components associated with turnip yellow mosaic virus. D. Derosier and R. Haselkorn. bibliog il Virology 30:705-15 D '66
Reconstitution of turnip yellow mosaic virus RNA with TMV protein subunits. R. E. F. Matthews. bibliog il Virology 30:82-96 S '66

BA
Citation
Semi-Monthly Issue

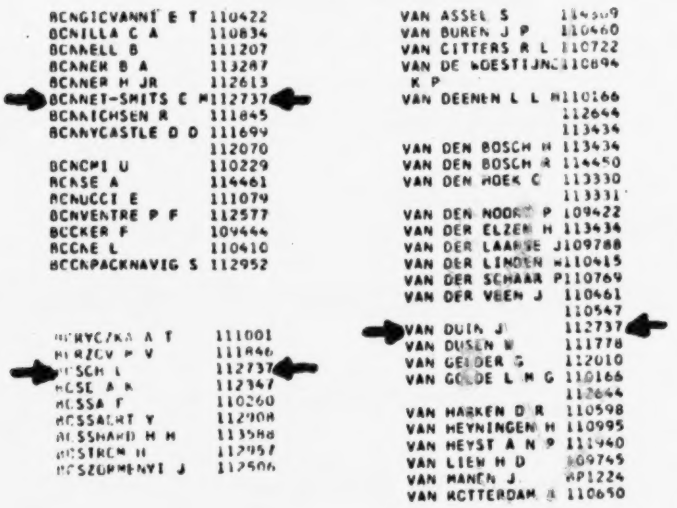


PLANT HOST VIRUSES

(See also "Virus Diseases" under Phytopathology)

† 112737. BOSCH, L., E. M. BONNET-SMITS, and J. VAN DUIN. (Dep. Biochem., State Univ. Leiden, Leiden, Neth.) In situ breakage of turnip yellow mosaic virus RNA and in situ aggregation of the fragments. VIROLOGY 31(3): 453-460. Illus. 1967.--Turnip yellow mosaic virus (TYMV) has been treated at alkaline pH (10.5-11.[illegible] and high ionic strength (1.0 M KCl) at 30° for 8 minutes. According to Kaper and Halperin such a treatment causes in situ breakage of the viral RNA chain, yielding fragments of uniform size (about 5 S). In the present paper it is demonstrated that in situ fragmentation is accompanied by in situ aggregation of the RNA fragments. The aggregate can be released as such from the capsid with phenol and sediments more rapidly and more uniformly than TYMV-RNA. It is assumed that each aggregate molecule is derived from one virus particle and has adopted a structure which is more compact than that of TYMV-RNA. Deaggregation, which is essentially irreversible outside of the capsid, can be accomplished by (a) heating at 55° for 2 minutes; (b) treatment with dimethylsulfoxide; (c) the successive removal of divalent and monovalent cations. Below limiting temperatures aggregates of intermediate sizes persist when the heating is prolonged. Possible models for the structure of the aggregate are discussed.--Authors.

BA
Author Index
Semi-Monthly Issue



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BONILLA C A	110834
BONNELL B	111207
BONNER B A	113287
BONNER H JR	112613
BONNET-SMITS E M	112737
BONNICHSEN R	111845
BONNYCASTLE D D	111694
	112070
BONOMI U	110229
BONSE A	114461
BONUCCI E	111079
BONVENTRE P F	112577
BOOKER F	109444
BOONE L	110410
BOONPACKNAVIG S	112952

BORYCZKA A T	111001
BORZOV P V	111846
BOSCH L	112737
BOSE A K	112347
BOSSA F	110260
BOSSAERT Y	112908
BOSSHARD H H	113588
BOSTROM H	112957
BOSZORMENYI J	112506

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VAN BUREN J P	110460
VAN CITTERS R L	110722
VAN DE WOESTIJNE K P	110894
VAN DEENEN L L M	110166
	112644
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VAN DEN BOSCH R	114450
VAN DEN HOEK C	113330
	113331
VAN DEN NOORT P	109422
VAN DER ELZEN H	113434
VAN DER LAARSE J	109788
VAN DER LINDEN W	110415
VAN DER SCHAAR P	110769
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	110547
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VAN DUSEN W	111778
VAN GELDER G	112010
VAN GOLDE L M G	110166
	112644
VAN HARKEN D R	110598
VAN HEYNINGEN H	110995
VAN HEYST A N P	111940
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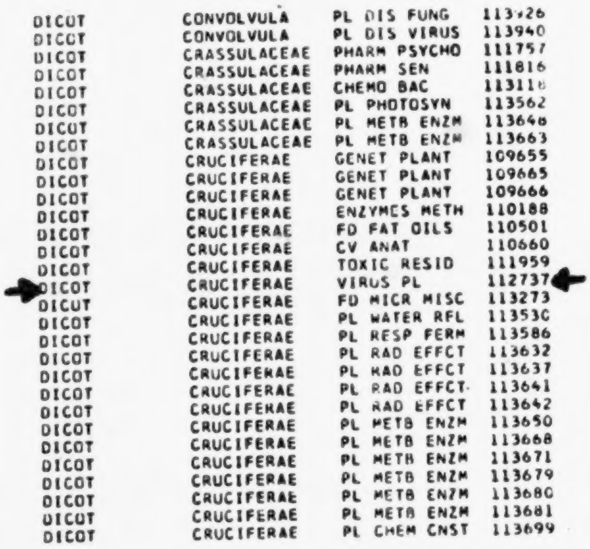
VAN MANEN J	WP1224
VAN ROTTERDAM [illegible]	110650

BA
Biosystematic Index
Semi-Monthly Issue

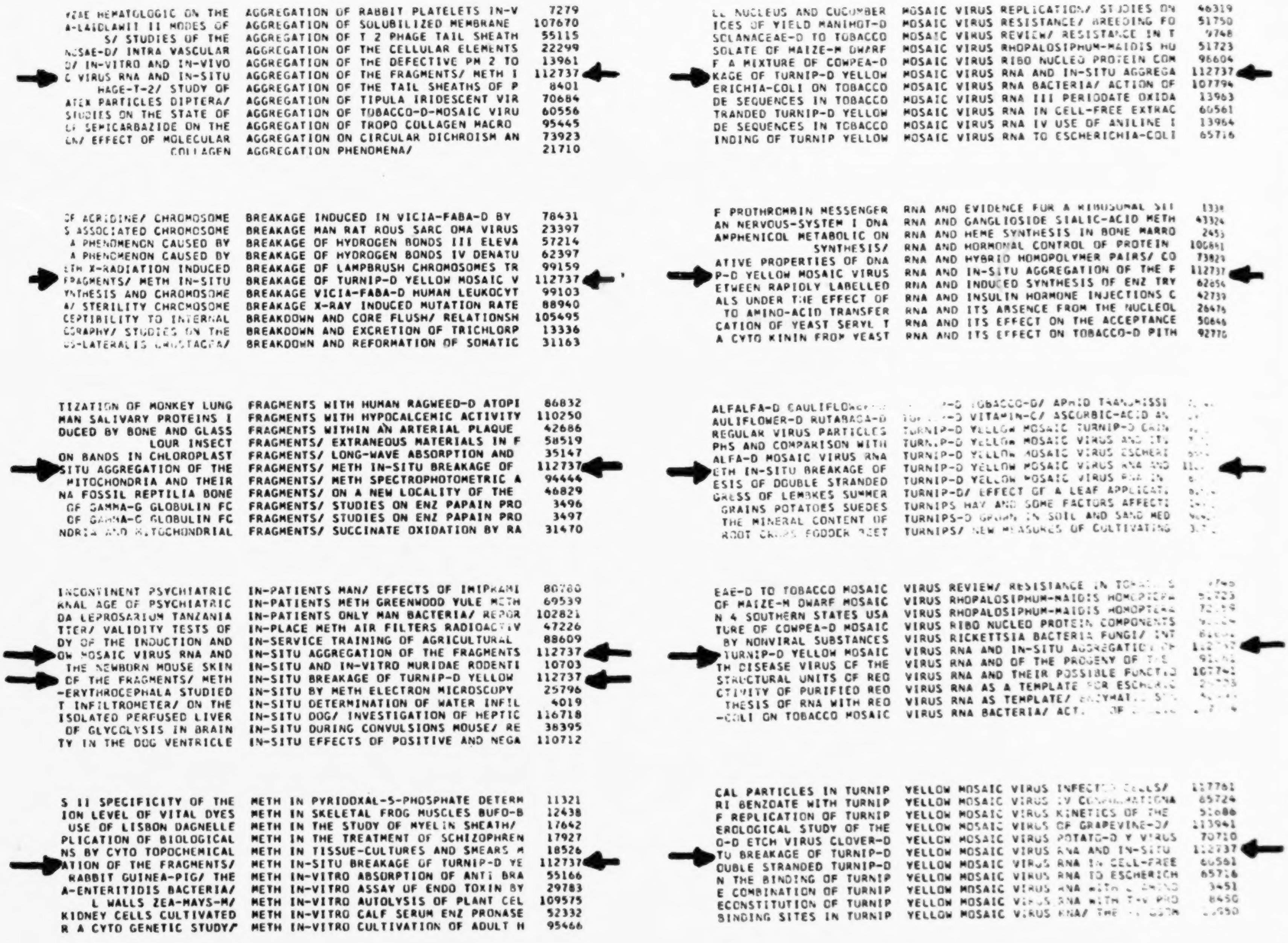


DICOT	CONVOLVULA	PL DIS FUNG	113926
DICOT	CONVOLVULA	PL DIS VIRUS	113940
DICOT	CRASSULACEAE	PHARM PSYCHO	111757
DICOT	CRASSULACEAE	PHARM SEN	111816
DICOT	CRASSULACEAE	CHEMO BAC	113118
DICOT	CRASSULACEAE	PL PHOTOSYN	113562
DICOT	CRASSULACEAE	PL METB ENZM	113646
DICOT	CRASSULACEAE	PL METB ENZM	113663
DICOT	CRUCIFERAE	GENET PLANT	109655
DICOT	CRUCIFERAE	GENET PLANT	109665
DICOT	CRUCIFERAE	GENET PLANT	109666
DICOT	CRUCIFERAE	ENZYMES METH	110188
DICOT	CRUCIFERAE	FD FAT OILS	110501
DICOT	CRUCIFERAE	CV ANAT	110660
DICOT	CRUCIFERAE	TOXIC RESID	111959
DICOT	CRUCIFERAE	VIRUS PL	112737
DICOT	CRUCIFERAE	FD MICR MISC	113273
DICOT	CRUCIFERAE	PL WATER RFL	113530
DICOT	CRUCIFERAE	PL RESP FERM	113586
DICOT	CRUCIFERAE	PL RAD EFFCT	113632
DICOT	CRUCIFERAE	PL RAD EFFCT	113637
DICOT	CRUCIFERAE	PL RAD EFFCT	113641
DICOT	CRUCIFERAE	PL RAD EFFCT	113642
DICOT	CRUCIFERAE	PL METB ENZM	113650
DICOT	CRUCIFERAE	PL METB ENZM	113668
DICOT	CRUCIFERAE	PL METB ENZM	113671
DICOT	CRUCIFERAE	PL METB ENZM	113679
DICOT	CRUCIFERAE	PL METB ENZM	113680
DICOT	CRUCIFERAE	PL METB ENZM	113681
DICOT	CRUCIFERAE	PL CHEM CNST	113699

Fig. 4 (continued)

Indexing Applied to One Document by Seven Services

BA
B.A.S.I.C. Index
Annual Cumulation



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     S/ STUDIES OF THE  AGGREGATION OF T 2 PHAGE TAIL SHEATH     55115
NOSAE-D/ INTRA VASCULAR  AGGREGATION OF THE CELLULAR ELEMENTS    22299
D/ IN-VITRO AND IN-VIVO  AGGREGATION OF THE DEFECTIVE PH 2 TO    13961
C VIRUS RNA AND IN-SITU  AGGREGATION OF THE FRAGMENTS/ METH I   112737
    HAGE-T-2/ STUDY OF  AGGREGATION OF THE TAIL SHEATHS OF P      8401
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F A MIXTURE OF COWPEA-D  MOSAIC VIRUS RIBO NUCLEO PROTEIN COM    96604
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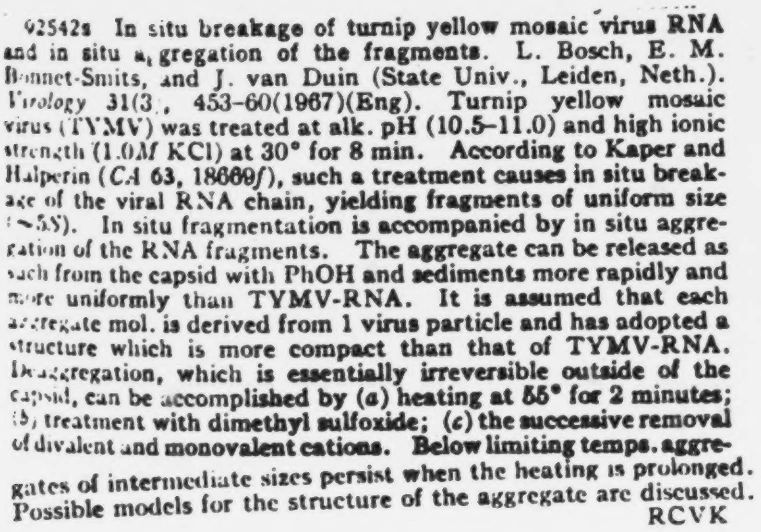

92542s **In situ breakage of turnip yellow mosaic virus RNA and in situ aggregation of the fragments.** L. Bosch, E. M. Bonnet-Smits, and J. van Duin (State Univ., Leiden, Neth.). *Virology* 31(3), 453-60(1967)(Eng). Turnip yellow mosaic virus (TYMV) was treated at alk. pH (10.5–11.0) and high ionic strength (1.0*M* KCl) at 30° for 8 min. According to Kaper and Halperin (*CA* 63, 18669*f*), such a treatment causes in situ breakage of the viral RNA chain, yielding fragments of uniform size (~5S). In situ fragmentation is accompanied by in situ aggregation of the RNA fragments. The aggregate can be released as such from the capsid with PhOH and sediments more rapidly and more uniformly than TYMV-RNA. It is assumed that each aggregate mol. is derived from 1 virus particle and has adopted a structure which is more compact than that of TYMV-RNA. Deaggregation, which is essentially irreversible outside of the capsid, can be accomplished by (*a*) heating at 55° for 2 minutes; (*b*) treatment with dimethyl sulfoxide; (*c*) the successive removal of divalent and monovalent cations. Below limiting temps. aggregates of intermediate sizes persist when the heating is prolonged. Possible models for the structure of the aggregate are discussed.
RCVK

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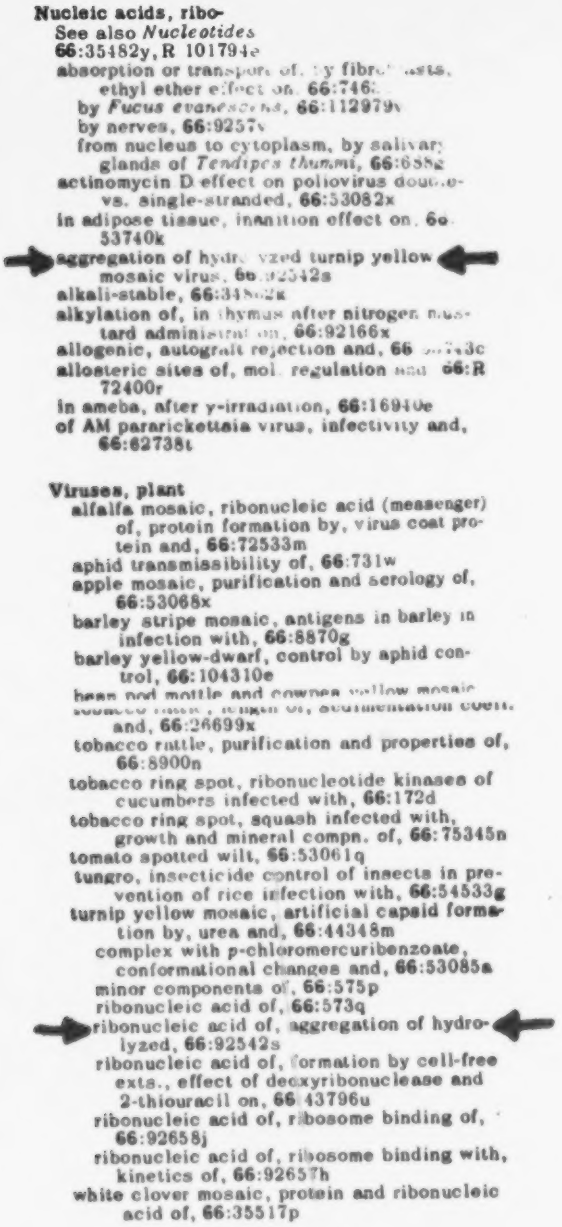

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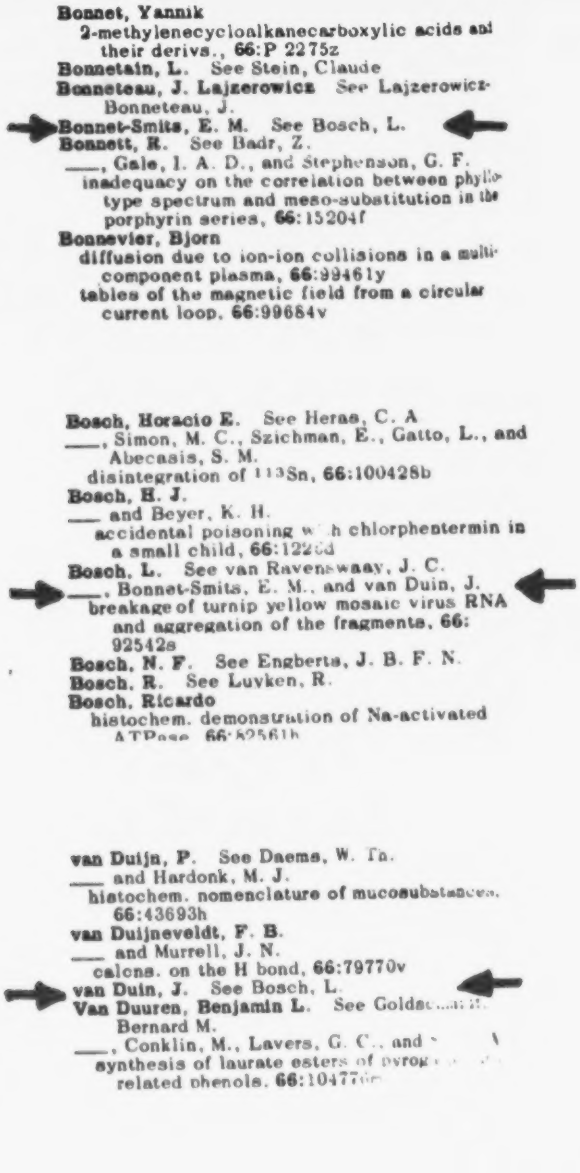

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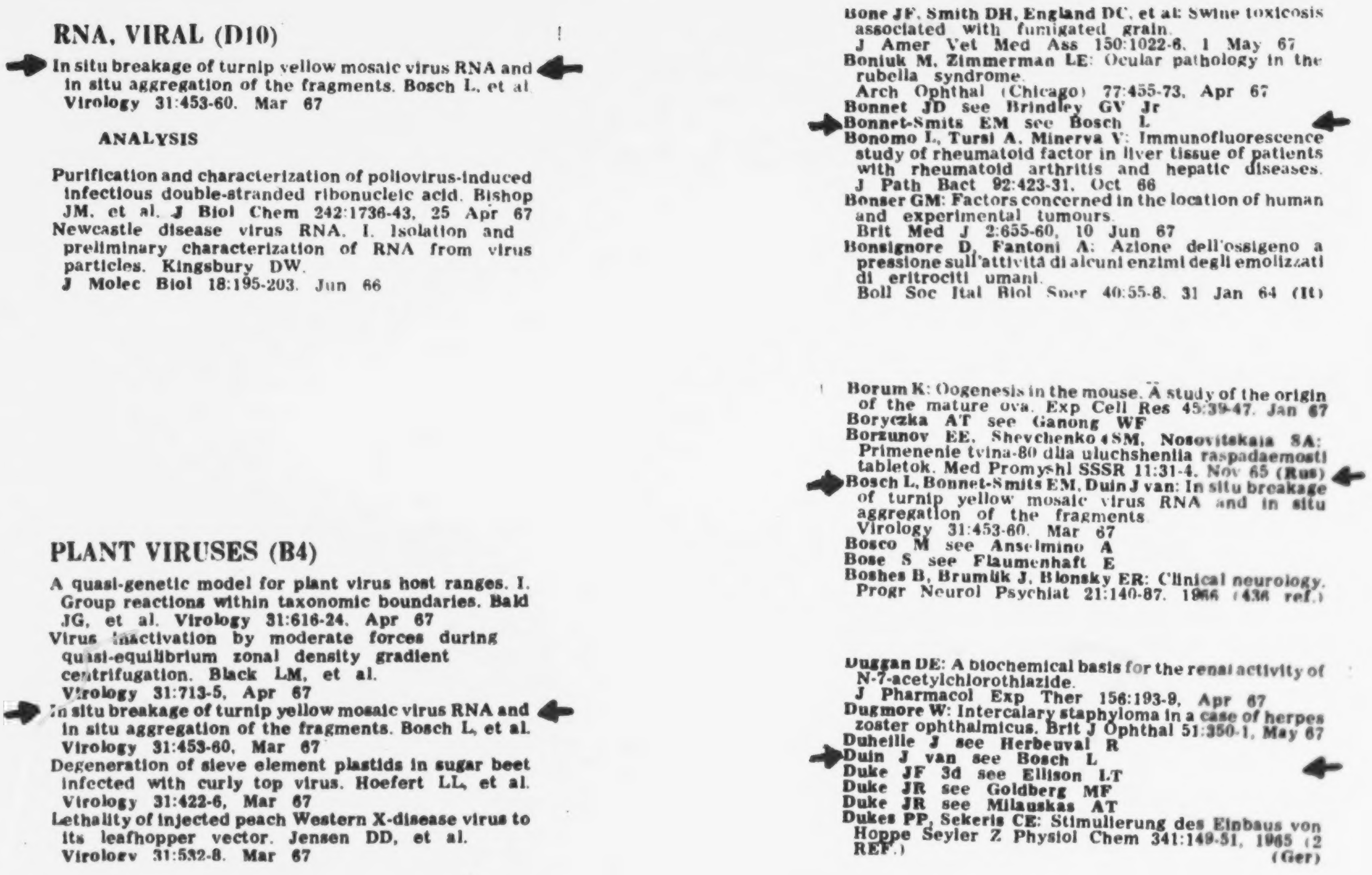

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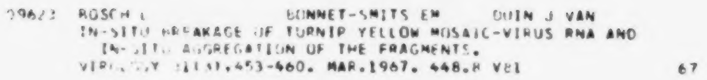

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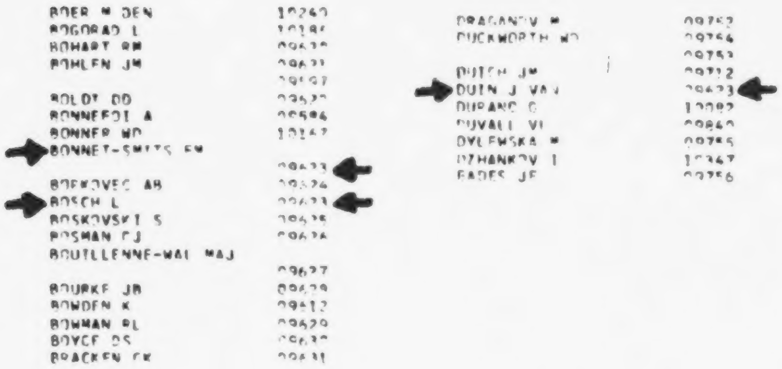

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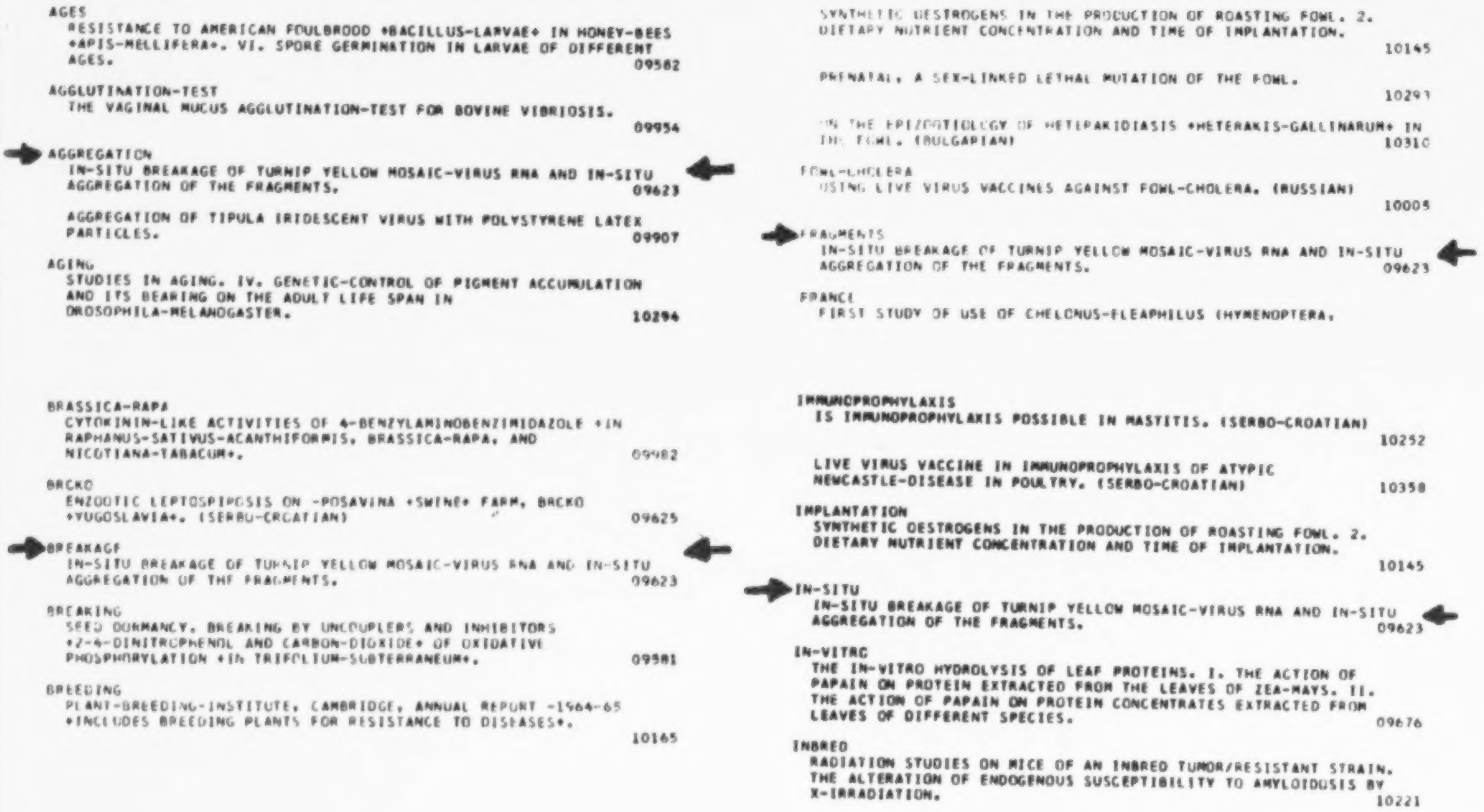

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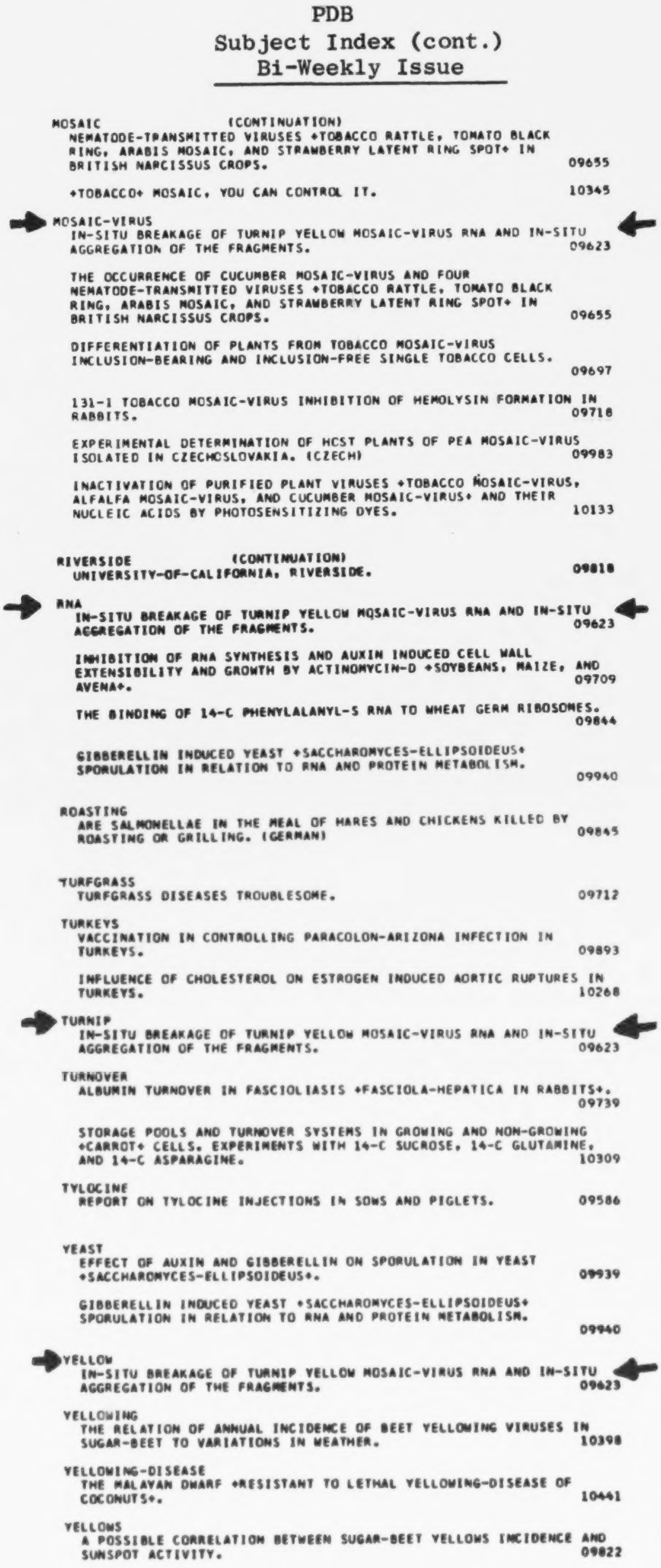

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GIBBERELLIN INDUCED YEAST +SACCHAROMYCES-ELLIPSOIDEUS+ SPORULATION IN RELATION TO RNA AND PROTEIN METABOLISM. 09940

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YELLOWING-DISEASE
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YELLOWS
A POSSIBLE CORRELATION BETWEEN SUGAR-BEET YELLOWS INCIDENCE AND SUNSPOT ACTIVITY. 09822

Fig. 4 (continued)

Indexing Applied to One Document by Seven Services

TA
Citation
Monthly Issue

Diseases - virus
See also # 1180, 1481, 1495, 1498

BOSCH, L.; BONNET-SMITS, E. M.; VAN DUIN, J.
In situ breakage of turnip yellow mosaic virus RNA and in situ aggregation of the fragments. Virology 31(3): 453-60, Mar. 1967. graphs.

Turnip yellow mosaic virus (TYMV) has been treated at alkaline pH (10.5-11.0) and high ionic strength (1.0 M KCl) at 30° for 8 minutes. According to Kaper and Halperin (1965) such a treatment causes in situ breakage of the viral RNA chain, yielding fragments of uniform size (about 5 S). In the present paper it is demonstrated that in situ fragmentation is accompanied by in situ aggregation of the RNA fragments. The aggregate can be released as such from the capsid with phenol and sediments more rapidly and more uniformly than TYMV-RNA. It is assumed that each aggregate molecule is derived from one virus particle and has adopted a structure which is more compact than that of TYMV-RNA. Deaggregation, which is essentially irreversible outside of the capsid, can be accomplished by heating at 55° for 2 minutes; treatment with dimethylsulfoxide; the successive removal of divalent and monovalent cations. Below limiting temperatures aggregates of intermediate sizes persist when the heating is prolonged. Possible models for the structure of the aggregate are discussed. (Abstract) 1196

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RIBONUCLEIC ACID TMV ORIENTATION	620
RIBONUCLEIC ACID TMV PHOSPHODIESTERASE EFFECT	1864
RIBONUCLEIC ACID TMV PYRIMIDINE DIMER	1552
RIBONUCLEIC ACID TMV SYNTHESIS ANTIBIOTICS EFFECT	1220
→ RIBONUCLEIC ACID TURNIP YELLOW MOSAIC VIRUS BREAKAGE	1196 ←
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Fig. 4 (continued)

Indexing Applied to One Document by Seven Services

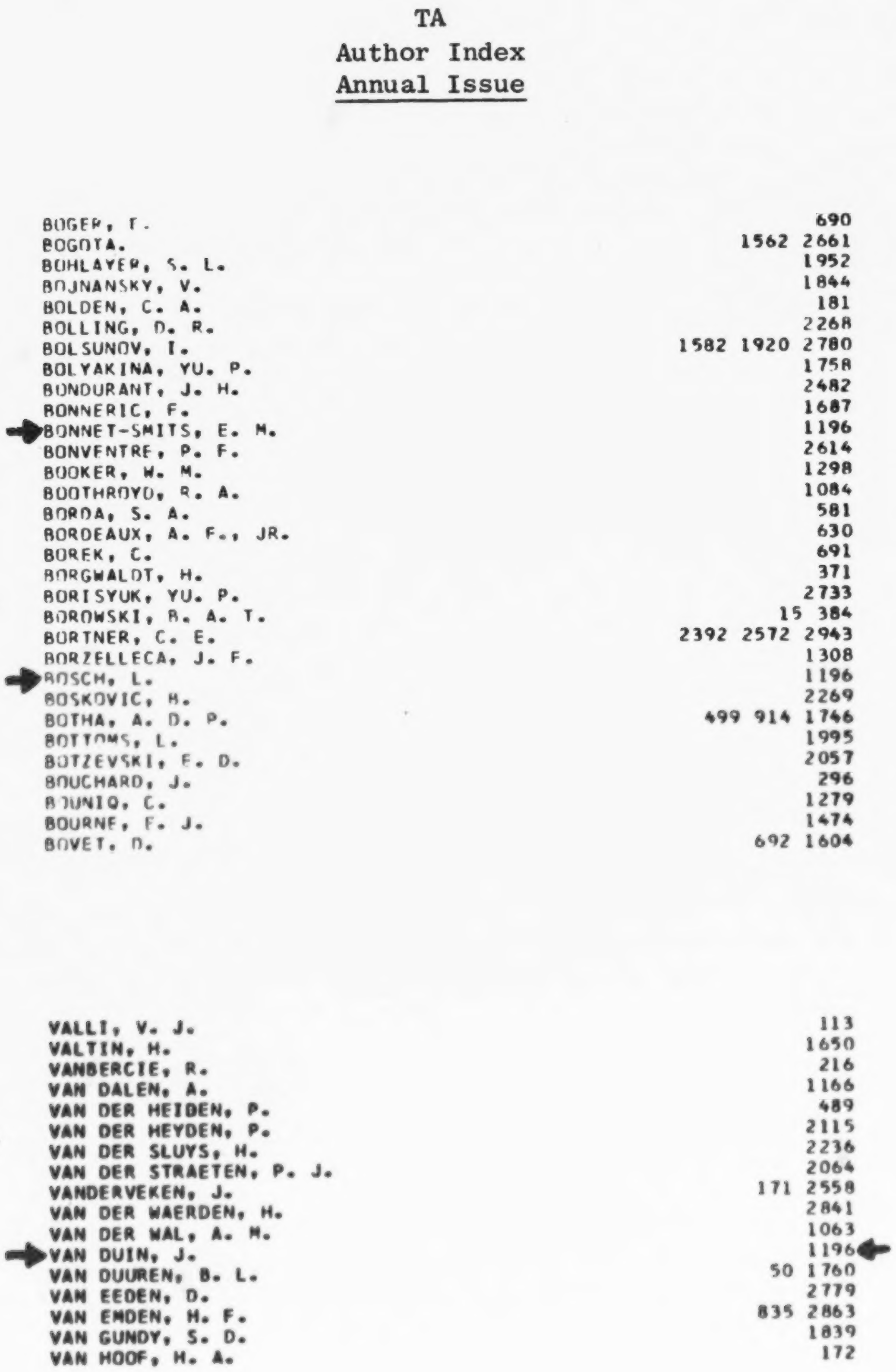

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Fig. 4 (concluded)

Indexing Applied to One Document by Seven Services

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III. RELATIVE INDEXING

A. PROCEDURE

This part of the study concentrated on an examination of the indexing actually applied by these services to a number of selected citations. The basic materials for this part of the study consisted of more than 2,000 citations from B of A that were indexed both by B of A and one or more of the fifteen other secondary services.

These original citations were from a uniform random sample of over 5,000 citations that were extracted from the 1967 B of A and used for the previously mentioned study of the overlap of B of A and these other services.* This uniform random sample of over 5000 citations (5.4 percent of 1967 B of A publication) was selected from the total 1967 B of A production of 94,238 citations. Because the B of A citations are printed only once in the subject section of an issue, and are assigned a unique serial number as indicated in a representative page shown in Fig. 5, it was easy to obtain a uniform random sample. Every 20th citation was selected for analysis, as well as every 326th citation, to boost the total sample size to over 5,000. This sample of citations formed the basis for many of the findings of the reports on this project.

Each citation in the samplewas annotated to show such things as its national origin, language, and form of publication. Different parts of the citation (e.g., author, title, date) were also annotated with data field tags for subsequent computer processing and file building. The citation was keypunched in a format for the INFOL file management system, for subsequent running on a CDC-3800 computer.** A total of 170 data elements (i.e., data fields) were established for each of the citation records in this file. Further description of this computer file and the associated procedures are given in earlier IGC project reports.*** These reports describe the searching which identified the citations indexed jointly by B of A and another service.

---

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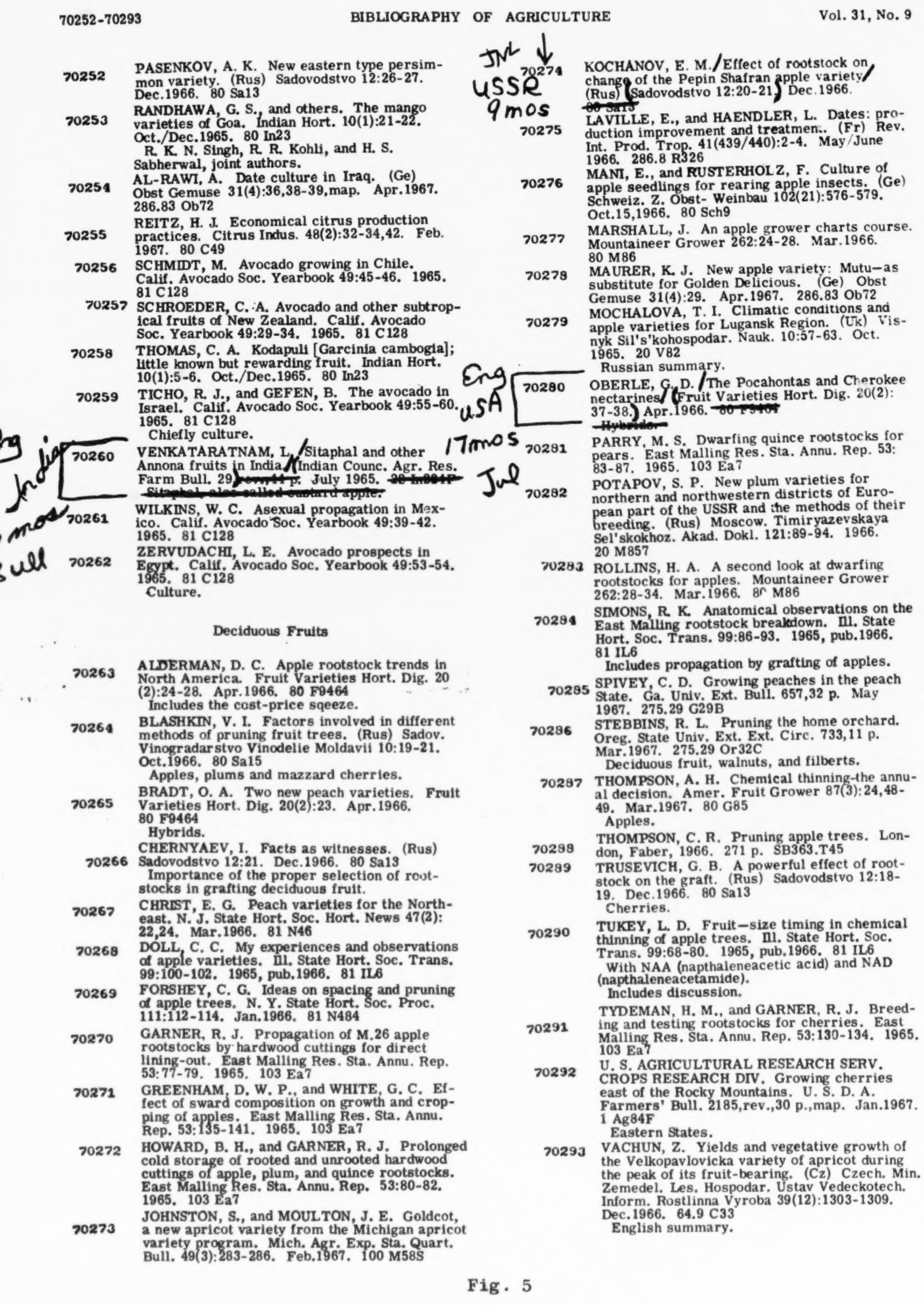
** 3600/3800 Computer Systems INFOL Reference Manual. Control Data Corporation, Palo Alto, California, July 1966.

*** Bourne, Charles P. op.cit.



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Culture.

Deciduous Fruits

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English summary.

Fig. 5

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Representative Page of 1967 B of A

All of the index terms obtained from the services for these citations were added to the computer file with the associated citations. This computer file of citations and the accompanying indexing data from each of the services were used to generate several types of printouts that provided the starting materials for this part of the study.

The index terms for these sample citations were obtained as a result of cooperative arrangements with several of the services. The comprehensive nature of this study would not have been possible without their generous support and assistance, particularly Chemical Abstracts Service, BioSciences Information Service of Biological Abstracts, and the National Library of Medicine. The literature searching done for our earlier overlap study identified those B of A citations in the sample that were covered by these 15 other services. Special computer runs were made to extract a bibliography of B of A citations known to be covered by each of the other services (e.g., CA) and to print them in a sequence convenient for the other service (e.g., by CA abstract number). This bibliography was sent to that service for their searching and annotation necessary to furnish the associated index terms. In most cases, the terms were extracted from original worksheets, computer files, and other records of the service. In a few cases, the services re-indexed the material in a way that was representative of their original production indexing. A summary of the procedures used to obtain the index terms for each service is given in Table VII. It is felt that even though some special procedures and re-indexing were required, the index terms used for this study generally represent the depth and quality of indexing regularly given by these services.

Service	Source of Index Terms
B of A	A computer listing by B of A number of all index terms applied to each B of A citation was supplied by NAL.
BA	After publication of BA indexes, the source records are not kept in a form that would easily permit the identification of all index terms supplied to a particular citation. Consequently, BA worked from the furnished bibliography of overlapped citations, obtained the original documents, and re-indexed in the same manner as done in its regular production indexing. Terms were separately identified for the B.A.S.I.C., Biosystematic, and CROSS indexes to BA.
BAI	BAI was unable to furnish any records of the terms used with a particular citation. Consequently, only one term was used -- the one under which the citation was found during the literature search.
CA	Given a bibliography of the CA citations overlapping with B of A, CA was able to extract all the associated index terms from its manual and machine files.
DSA	Index terms were supplied by DSA in response to a furnished bibliography of DSA citations that overlapped with B of A.
EI	By policy, EI places a citation only under one subject heading. The B of A citations found in EI by the searchers were annotated with the associated subject heading which was then used for this study.
FA	FA index terms were unavailable.
HA	Index terms were supplied by HA in response to a furnished bibliography of HA citations that overlapped with B of A.
IM	Index terms were furnished by NLM in response to a furnished bibliography of IM citations that overlapped with B of A. Terms were separately identified for those that were used in IM, and those that were included only in the MEDLARS computer file.
IV	IV index terms were unavailable.
MGA	MGA index terms accompany each abstract in the printed MGA issues. These were found and recorded by the searchers during the overlap study.

Table VII

Sources of Index Terms Used in Indexing Study

Service	Source of Index Terms
PDB	PDB has no annual index, and until late 1967 there was no way to pull together all the index terms associated with a particular citation. PDB used a KWIC index program to generate the index terms automatically from the title, which may be augmented by the PDB editor. For this study this indexing procedure was simulated by our analysts who manually performed the same type of KWIC indexing, with the assistance of 2 stop word lists furnished by NAL, to identify all possible index terms in the title. This probably introduced some additional errors into this process, but it is felt that this was a very good approximation. Further error was introduced by the fact that different stop word lists were used by the KWIC program at different times during 1967, but there were no records available to show which list was used for which issues. Beginning with the December 8, 1967 issue, subject descriptors were printed in PDB with the citations. These descriptors were recorded by the searchers.
PAIS	PAIS was unable to furnish any records of the terms used with any particular citation. Consequently, only one term was used -- the one under which the citation was found during the literature search.
TTD	Index terms were supplied by TTD in response to a furnished bibliography of TTD citations that overlapped with B of A. Terms were separately identified for the printed issues as well as the computer file.
TA	Index terms were supplied by TA in response to a furnished bibliography of TA citations that overlapped with B of A.
WAERSA	Index terms were supplied by WAERSA in response to a furnished bibliography of WAERSA citations that overlapped with B of A. One set of terms was supplied to correspond to the present indexing system, and another set of terms was supplied to correspond to the planned new indexing system.

Table VII (Concluded)

Sources of Index Terms Used in Indexing Study

B. AVERAGE NUMBER OF SUBJECT ACCESS POINTS PER CITATION

1. Absolute Number

Measures of the average number of subject access points per citation for BA* and CA** have been published. IGC staff analyzed several other services to get additional measures. These data are shown below.

Service	Total Number of Citations in Sample	Total Number of Subject Access Points in Sample	Average Number of Subject Access Points Per Citation	Data Analyzed
B of A	94,238	231,898	2.5	NAL computer listing of all index terms assigned to B of A citations in 1967
BA	5,209	B.A.S.I.C. 44,160	8.5	October 15, 1967 issue*
		Biosystematic 6,600	1.3	
		CROSS 35,813	6.9	
		Total 86,573	16.6	
CA	93,000	580,700	6.2	January-June 1964 (Vol. 60)**
MGA	754	1,394	1.8	December 1967 issue
PDB	842	3,333	4.0	May 10, 1968 issue
TA	2,966	4,119	1.4	All 1967 issues
TTD	10,926	15,490	1.4	1967 annual cumulation

These measures are not directly comparable because the data analyzed were not selected according to any consistent criteria, and thus they have no direct interrelation. There is no intended correlation by subject, time period, or quantity.

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*Zabriskie, K.H., Jr. and A. Farren, "The B.A.S.I.C. Index to Biological Abstracts," American Journal of Pharmaceutical Education, v. 32, no. 8, May 1968, p. 190

**Wetsel, F.R., "Time Studies in Producing Subject Indexes for Chemical Abstracts," Journal of Chemical Documentation, v. 5, no. 4, November 1965, p. 212.

2. Relative Number

A more meaningful measure may be obtained by comparing the number of subject access points provided by B of A and another service for the same citations. The computer file of citations covered jointly by B of A and each of the other services included the index terms supplied by the services as described earlier. By using the INFOL file manipulation capabilities, a special printout was made which listed and counted all the index terms supplied by a particular service in regular issues and in computer data banks to those citations indexed jointly with B of A (see Fig. 6). Another listing was made of the terms supplied by B of A and each other service to the citations covered by both (see Fig. 7). From these printouts, a count of the terms supplied by both services for the identical collections of citations (i.e., citations that have index terms recorded from both services) was made. This count provided a relative measure of the average number of subject access points provided by each service for exactly the same collection of original documents. These data are illustrated in Fig. 8 and summarized in Table VIII.

These data show that two services (BA and TTD) furnished more than four times as many access points as B of A for the same citations. These two services provided an average of more than 10 subject access points per citation. However, in the case of TTD this number includes the large number in the computer data bank; the printed issues of TTD averaged only 1.67 terms per citation. The data indicate that for the same material four printed services provided at least 30 percent more index terms, and at least three other services provide roughly as many. Including the terms in computer files, six of the eleven services thus studied provided more index terms than B of A.

C. RELATIONSHIP OF TERMS APPLIED BY TWO SERVICES TO THE SAME DOCUMENT

1. Procedure

a. The Need for a Measure

One of the main objectives of this indexing study effort was to show the relationship of B of A indexing to the indexing provided to the same material by other secondary services. Comparisons have been made between the language of indexing systems,* but the examination that we

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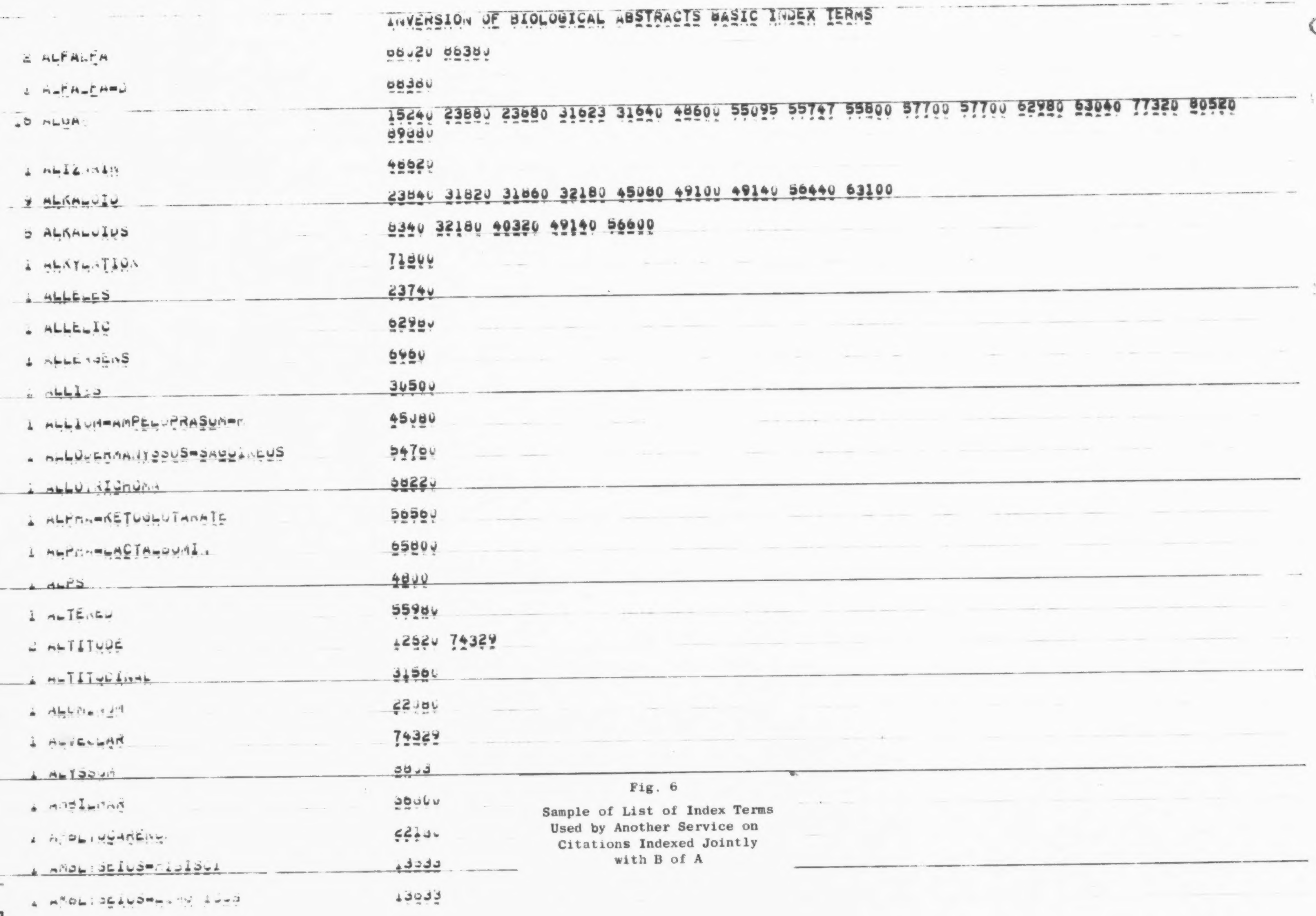
* Painter, Ann F. An Analysis of Duplication and Consistency of Subject Indexing Involved in Report Handling at the Office of Technical Services. Ph.D. Thesis, Rutgers, The State University, 1963.



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                          INVERSION OF BIOLOGICAL ABSTRACTS BASIC INDEX TERMS

 2 ALFALFA                 66020 86380

 1 ALFALFA=D               66380

16 ALGAE                   15240 23880 23680 31623 31640 48600 55095 55747 55800 57700 57700 62980 63040 77320 80520
                           89880

 1 ALIZARIN                46620

 9 ALKALOID                23840 31820 31860 32180 45080 49100 49140 56440 63100

 5 ALKALOIDS               8340 32180 40320 49140 56600

 1 ALKYLATION              71800

 1 ALLELES                 23740

 1 ALLELIC                 62980

 1 ALLERGENS               6960

 1 ALLIES                  30500

 1 ALLIUM=AMPELOPRASUM=P   45080

 1 ALLODERMANYSSUS=SANGUINEUS   54700

 1 ALLOTRICHOMA            68220

 1 ALPHA=KETOGLUTARATE     56560

 1 ALPHA=LACTALBUMIN       65800

 1 ALPS                    4800

 1 ALTERED                 55980

 2 ALTITUDE                12520 74329

 1 ALTITUDINAL             31560

 1 ALUMINUM                22080

 1 ALVEOLAR                74329

 1 ALYSSUM                 8803

 1 AMBILMAR                38000

 1 AMBLYOCARENE            22130

 1 AMBLYSEIUS=FISISCI      13033

 1 AMBLYSEIUS=L   N 1963   13033
```

Fig. 6

Sample of List of Index Terms
Used by Another Service on
Citations Indexed Jointly
with B of A

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                                                                          9 MAY 1969     PAGE NO.     11

                      COMPARISON OF B OF A WITH CHEMICAL ABSTRACTS--SECTION HEADINGS AND INDEX TERMS

B OF A SEQUENCE NUMBER 4194
TITLE                  EFFECTS OF COPPER AND COPPER FUNGICIDE SOIL RESIDUES ON PHYTOPHTHORA
B OF A SECTION HEADING PLANT SCIENCE - PLANT PATHOLOGY AND PROTECTION - FUNGUS DISEASES - 4094ICULTURAL CROPS
CA SECTION HEADING     PESTICIDES
B OF A INDEX TERMS     POTATOES   FUNGUS DISEASES   CONTROL * LATE BLIGHT   POTATOES * FUNGICIDES   RESIDUAL EFFECTIVENESS *
                       PHYTOPHTHORA INFESTANS   POTATOES * COPPER   FUNGICIDES
CA INDEX TERMS         C10H9CI4NO2S *
                       4-CYCLOHEXENE-1,2-DICARBOXIMIDE, N-((1,1,2,2-TETRACHLOROETHYL) THIO)- - RESIDUES OF, IN SOIL, PHYTOPHTHORA
                       INFESTANS RESPONSE TO * 2425061 * MILLER 658 - RESIDUES OF, IN SOIL, PHYTOPHTHORA INFESTANS RESPONSE TO *
                       CU4H6O10S.H2O *
                       COPPER HYDROXIDE SULFATE NO. (CU4(OH)6(SO4)), MONOHYDRATE - RESIDUES OF, IN SOIL, PHYTOPHTHORA INFESTANS RESPONS
                       TO * PHYTOPHTHORA - INFESTANS, FUNGICIDE SOIL RESIDUE EFFECT ON *
                       SOILS - FUNGICIDE RESIDUES IN, PHYTOPHTHORA INFESTANS RESPONSE TO *
                       COPPER, BIOL. STUDIES - IN SOIL FROM FUNGICIDE, PHYTOPHTHORA INFESTANS RESPONSE TO *
                       BORDEAUX MIXTURE - RESIDUES OF, IN SOIL, PHYTOPHTHORA INFESTANS RESPONSE TO

B OF A SEQUENCE NUMBER 423
TITLE                  LABORATORY AND FIELD EVALUATION OF SELECTED PESTICIDES FOR CONTROL OF THE RED CRAYFISH IN CALIFORNIA RICE FIELDS
B OF A SECTION HEADING PLANT SCIENCE - PLANT PATHOLOGY AND PROTECTION - INJURIES
CA SECTION HEADING     PESTICIDES
B OF A INDEX TERMS     RICE   PEST CONTROL   CHEMICAL   CALIFORNIA * INSECTICIDES   RICE PEST CONTROL
CA INDEX TERMS         C10H15O3PS2 *
                       PHOSPHOROTHIOIC ACID, O,O-DIMETHYL O-(4-(METHYLTHIO)-M-TOLYL) ESTER - IN CRAYFISH CONTROL IN RICE FIELDS *
                       C8H10NO5PS * PHOSPHOROTHIOIC ACID, O,O-DIMETHYL O-(P-NITROPHENYL) ESTER - IN CRAYFISH CONTROL IN RICE FIELDS *
                       C9H11CI3NO3PS *
                       PHOSPHOROTHIOIC ACID, O,O-DIETHYL O-(3,5,6-TRICHLORO-2-PYRIDYL) ESTER - IN CRAYFISH CONTROL IN RICE FIELDS *
                       PHOSPHOROTHIOIC ACID, O,O-DIETHYL O-(P-NITROPHENYL) ESTER - IN CRAYFISH CONTROL IN RICE FIELDS *
                       1,5,5,8-DIMETHANONAPHTHALENE, 1,2,3,4,10,10-HEXACHLORO-6,7-EPOXY-1,4,4A,5,6,7,8,8A-OCTAHYDRORO-, ENDO,EXO- - IN
                       CRAYFISH CONTROL IN RICE FIELDS * C12H11NO2 *
                       CARBAMIC ACID, METHYL-, 1-NAPHTHYL ESTER - IN CRAYFISH CONTROL IN RICE FIELDS * C10H12CI3O2PS *
                       PHOSPHONOTHIOIC ACID, ETHYL-, O-ETHYL O-(2,4,5-TRICHLOROPHENYL) ESTER - IN CRAYFISH CONTROL IN RICE FIELDS *
                       PHENOL, 2,4,5-TRICHLORO-, O-ESTER WITH O-ET ETHYLPHOSPHONOTHIOATE - IN CRAYFISH CONTROL IN RICE FIELDS *
                       C10H9NO2S * CARBAMIC ACID, METHYL-, BENZO(B)THIEN-4-YL ESTER - IN CRAYFISH CONTROL IN RICE FIELDS * C7H14NO5P *
                       PHOSPHORIC ACID, DIMETHYL ESTER, ESTER WITH 3-HYDROXY-N-METHYLCROTONAMIDE, (E)- - IN CRAYFISH CONTROL IN RICE
                       FIELDS * PESTICIDES - FOR CRAYFISH CONTROL IN RICE FIELDS *
                       CRAYFISH - CONTROL OF PROCAMBARUS CLARKII, IN RICE FIELDS * RICE - CRAYFISH CONTROL IN FIELDS OF, PESTICIDES FOR

B OF A SEQUENCE NUMBER 4212
TITLE                  SOIL FUMIGATION WITH D-D FOR CONTROL OF PRATYLENCHUS PENETRANS IN CORN
B OF A SECTION HEADING PLANT SCIENCE - PLANT PATHOLOGY AND PROTECTION - NEMATODES - FIELD CROPS
CA SECTION HEADING     PESTICIDES
B OF A INDEX TERMS     CORN   NEMATODES   CONTROL   NEW YORK * D-D MIXTURE * PRATYLENCHUS PENETRANS   CORN *
                       SOILS   FUMIGATION   NEW YORK
CA INDEX TERMS         C3H4CI2 * PROPENE, 1,3-DICHLORO- - PRATYLENCHUS PENETRANS CONTROL BY, IN CORN *
                       PRATYLENCHUS - PENETRANS, CONTROL OF, IN CORN, D-D IN * CORN - PRATYLENCHUS PENETRANS CONTROL ON, BY D-D *
                       NEMATOCIDES - D-D AS * PROPANE, 1,2-DICHLORO- - PRATYLENCHUS PENETRANS CONTROL BY, IN CORN
```

Fig. 7a

Examples of Computer Printouts
of Index Terms Contributed by
B of A and Other Services
to the Same Document

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                                                                            8 MAY 1969           PAGE NO.      2

                                          COMPARISON OF B OF A WITH INDEX MEDICUS--INDEX TERMS

 OF A SEQUENCE NUMBER 11060
ITLE                   THIOREDOXIN FROM LACTOBACILLUS LEICHMANNII AND ITS ROLE AS HYDROGEN DONOR FOR RIBONUCLEOSIDE TRIPHOSPHATE
                       REDUCTASE
 OF A SECTION HEADING AGRICULTURAL PRODUCTS - DAIRY PRODUCTS - ANALYSIS AND COMPOSITION
 OF A INDEX TERMS      NUCLEOSIDES   IN LACTOBACILLUS LEICHMANNII * THIOREDOXIN   IN LACTOBACILLUS LEICHMANNII *
                       REDUCTASE   IN LACTOBACILLUS LEICHMANNII * LACTOBACILLUS LEICHMANNII   BIOCHEMISTRY *
                       TRIPHOSPHATES   IN LACTOBACILLUS LEICHMANNII * HYDROGEN   IN LACTOBACILLUS LEICHMANNII
M INDEX TERMS          BACTERIAL PROTEINS/METABOLISM * ESCHERICHIA COLI/ENZYMOLOGY * LACTOBACILLUS/ENZYMOLOGY *
                       OXIDOREDUCTASES/METABOLISM
M MEDLARS TERMS        BACTERIAL PROTEINS/METABOLISM * ELECTROPHORESIS * ESCHERICHIA COLI/ENZYMOLOGY * GUANINE NUCLEOTIDES/METABOLISM
                        * KINETICS * LACTOBACILLUS/ENZYMOLOGY * NADP/METABOLISM * OXIDOREDUCTASES/METABOLISM

 OF A SEQUENCE NUMBER 18760
ITLE                   GAS-LIQUID CHROMATOGRAPHIC ANALYSIS OF MILK FAT, RAPID PREPARATION OF BUTYL ESTERS.
 OF A SECTION HEADING AGRICULTURAL PRODUCTS - DAIRY PRODUCTS - ANALYSIS AND COMPOSITION
 OF A INDEX TERMS      CHROMATOGRAPHY   IN MILK RESEARCH * MILK   FAT   ANALYSIS
M INDEX TERMS          BUTYRATES * FATTY ACIDS/ANALYSIS * MILK/ANALYSIS
M MEDLARS TERMS        BUTYRATES * CATTLE * CHROMATOGRAPHY, GAS * FATTY ACIDS/ANALYSIS * MILK/ANALYSIS

 OF A SEQUENCE NUMBER 43160
ITLE                   CHANGES IN MILK PROTEINS TREATED WITH HYDROGEN PEROXIDE
 OF A SECTION HEADING AGRICULTURAL PRODUCTS - DAIRY PRODUCTS - ANALYSIS AND COMPOSITION
 OF A INDEX TERMS      HYDROGEN PEROXIDE   EFFECTS ON MILK * MILK   PROTEINS * PROTEINS   CHEMISTRY
M INDEX TERMS          CASEIN * HYDROGEN PEROXIDE * LACTOGLOBULINS * MILK * PROTEINS
M MEDLARS TERMS        CASEIN * CATTLE * CHEMISTRY * ELECTROPHORESIS * HYDROGEN PEROXIDE * LACTOGLOBULINS * MERCAPTOETHANOL * MILK *
                       PROTEINS * UREA

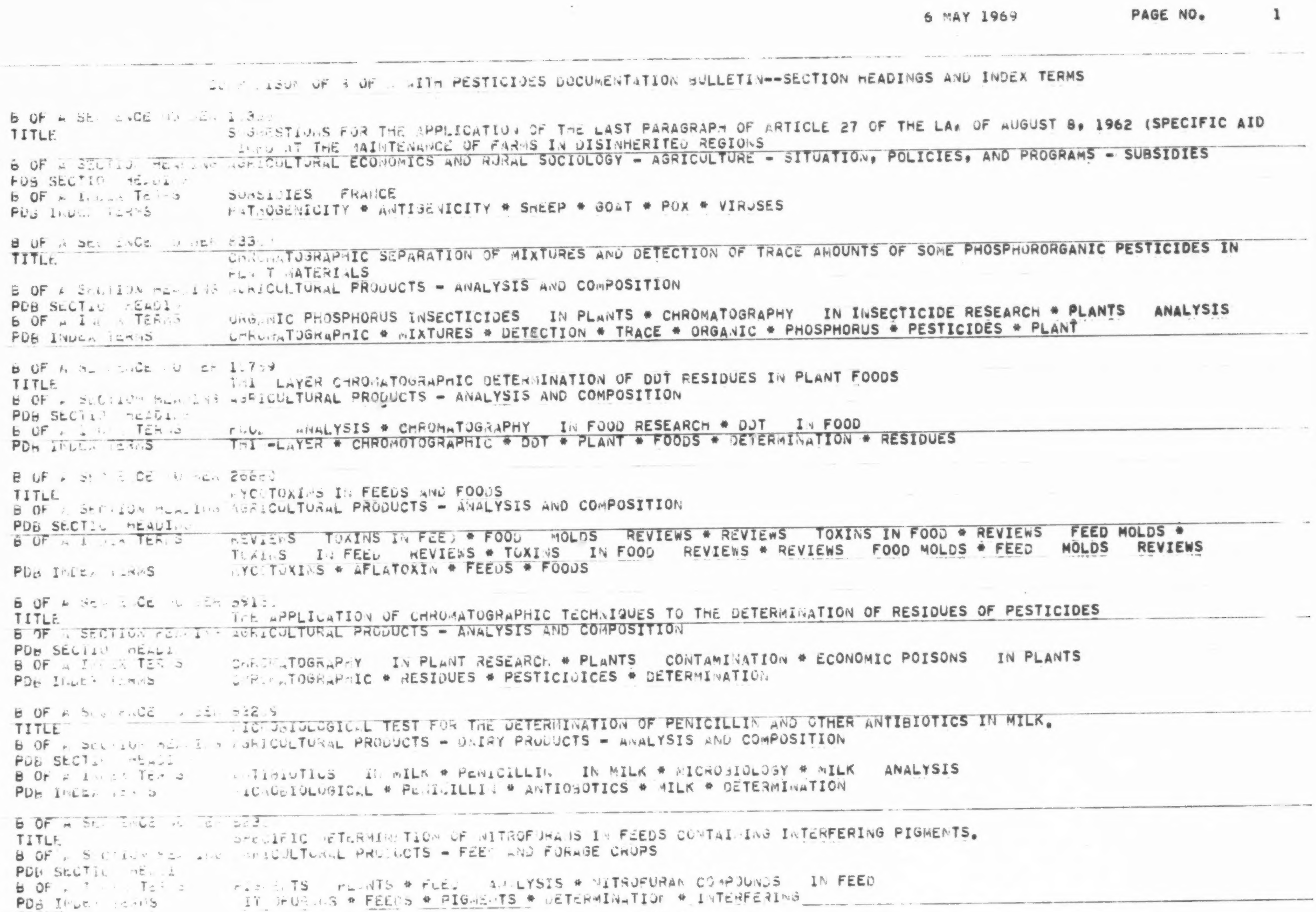
 OF A SEQUENCE NUMBER 27280
ITLE                   COMPARISON OF METHODS OF ANALYSIS FOR DETERMINATION OF FLUID FATTY ACIDS, WITH SPECIAL ATTENTION TO PROPIONIC
                       ACID CONTENT
 OF A SECTION HEADING AGRICULTURAL PRODUCTS - FEED AND FORAGE CROPS
 OF A INDEX TERMS      PROPIONIC ACID   IN RUMEN * FATTY ACIDS   IN SILAGE * RUMEN * PROPIONIC ACID   IN SILAGE * SILAGE   ANALYSIS *
                       FATTY ACIDS   IN RUMEN
M INDEX TERMS          HORSE DISEASES/MICROBIOLOGY * VERTEBRATE VIRUSES, UNCLASSIFIED/ISOLATION + PURIFICATION
M MEDLARS TERMS        ANIMAL EXPERIMENTS * ANTIBODY FORMATION * COLD * HORSE DISEASES/MICROBIOLOGY * INTERFERON/ANALYSIS * MICE *
                       NEUTRALIZATION TESTS * TISSUE CULTURE * VERTEBRATE VIRUSES, UNCLASSIFIED/IMMUNOLOGY *
                       VERTEBRATE VIRUSES, UNCLASSIFIED/ISOLATION + PURIFICATION * VIRAL VACCINES * VIRUS CULTIVATION

 OF A SEQUENCE NUMBER 27500
ITLE                   INHIBITION OF TOMATO PECTINESTERASE BY TANNIC ACID
 OF A SECTION HEADING AGRICULTURAL PRODUCTS - FRUITS, VEGETABLES, AND NUTS - PROCESSING AND STORAGE
 OF A INDEX TERMS      TANNINS   EFFECTS ON TOMATOES * PECTASE   IN TOMATOES * TOMATOES   PROCESSING * TOMATOES   ENZYMES
M INDEX TERMS          ESTERASES/METABOLISM * TANNINS/PHARMACODYNAMICS
M MEDLARS TERMS        ENZYME INHIBITORS/PHARMACODYNAMICS * ESTERASES/METABOLISM * FRUIT * TANNINS/PHARMACODYNAMICS

 OF A SEQUENCE NUMBER 1780
ITLE                   INTRODUCTORY REMARKS, WITH SPECIAL REFERENCE TO MEAT.
 OF A SECTION HEADING AGRICULTURAL PRODUCTS - LIVESTOCK AND LIVESTOCK PRODUCTS - ANALYSIS AND COMPOSITION
 OF A INDEX TERMS      MEAT   MICROORGANISMS
M INDEX TERMS          FLAVORING AGENTS * FOOD MICROBIOLOGY * MEAT
M MEDLARS TERMS        FLAVORING AGENTS * FOOD MICROBIOLOGY * HUMAN * MEAT
```

Fig. 7b

Examples of Computer Printouts
of Index Terms Contributed by
B of A and Other Services
to the Same Document



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                                                                        6 MAY 1969          PAGE NO.        1

                COMPARISON OF B OF A WITH PESTICIDES DOCUMENTATION BULLETIN--SECTION HEADINGS AND INDEX TERMS

B OF A SEQUENCE NUMBER 1[illegible]3[illegible]
TITLE                  SUGGESTIONS FOR THE APPLICATION OF THE LAST PARAGRAPH OF ARTICLE 27 OF THE LAW OF AUGUST 8, 1962 (SPECIFIC AID
                        [illegible] AT THE MAINTENANCE OF FARMS IN DISINHERITED REGIONS
B OF A SECTION HEADING AGRICULTURAL ECONOMICS AND RURAL SOCIOLOGY - AGRICULTURE - SITUATION, POLICIES, AND PROGRAMS - SUBSIDIES
PDB SECTION HEADING
B OF A INDEX TERMS     SUBSIDIES   FRANCE
PDB INDEX TERMS        PATHOGENICITY * ANTIGENICITY * SHEEP * GOAT * POX * VIRUSES

B OF A SEQUENCE NUMBER 833[illegible]
TITLE                  CHROMATOGRAPHIC SEPARATION OF MIXTURES AND DETECTION OF TRACE AMOUNTS OF SOME PHOSPHORORGANIC PESTICIDES IN
                       PLANT MATERIALS
B OF A SECTION HEADING AGRICULTURAL PRODUCTS - ANALYSIS AND COMPOSITION
PDB SECTION HEADING
B OF A INDEX TERMS     ORGANIC PHOSPHORUS INSECTICIDES   IN PLANTS * CHROMATOGRAPHY   IN INSECTICIDE RESEARCH * PLANTS   ANALYSIS
PDB INDEX TERMS        CHROMATOGRAPHIC * MIXTURES * DETECTION * TRACE * ORGANIC * PHOSPHORUS * PESTICIDES * PLANT

B OF A SEQUENCE NUMBER 1[illegible]7[illegible]9
TITLE                  THIN LAYER CHROMATOGRAPHIC DETERMINATION OF DDT RESIDUES IN PLANT FOODS
B OF A SECTION HEADING AGRICULTURAL PRODUCTS - ANALYSIS AND COMPOSITION
PDB SECTION HEADING
B OF A INDEX TERMS     FOOD   ANALYSIS * CHROMATOGRAPHY   IN FOOD RESEARCH * DDT   IN FOOD
PDB INDEX TERMS        THIN-LAYER * CHROMOTOGRAPHIC * DDT * PLANT * FOODS * DETERMINATION * RESIDUES

B OF A SEQUENCE NUMBER 266[illegible]
TITLE                  MYCOTOXINS IN FEEDS AND FOODS
B OF A SECTION HEADING AGRICULTURAL PRODUCTS - ANALYSIS AND COMPOSITION
PDB SECTION HEADING
B OF A INDEX TERMS     REVIEWS   TOXINS IN FEED * FOOD   MOLDS   REVIEWS * REVIEWS   TOXINS IN FOOD * REVIEWS   FEED MOLDS *
                       TOXINS   IN FEED   REVIEWS * TOXINS   IN FOOD   REVIEWS * REVIEWS   FOOD MOLDS * FEED   MOLDS   REVIEWS
PDB INDEX TERMS        MYCOTOXINS * AFLATOXIN * FEEDS * FOODS

B OF A SEQUENCE NUMBER 591[illegible]
TITLE                  THE APPLICATION OF CHROMATOGRAPHIC TECHNIQUES TO THE DETERMINATION OF RESIDUES OF PESTICIDES
B OF A SECTION HEADING AGRICULTURAL PRODUCTS - ANALYSIS AND COMPOSITION
PDB SECTION HEADING
B OF A INDEX TERMS     CHROMATOGRAPHY   IN PLANT RESEARCH * PLANTS   CONTAMINATION * ECONOMIC POISONS   IN PLANTS
PDB INDEX TERMS        CHROMATOGRAPHIC * RESIDUES * PESTICIDICES * DETERMINATION

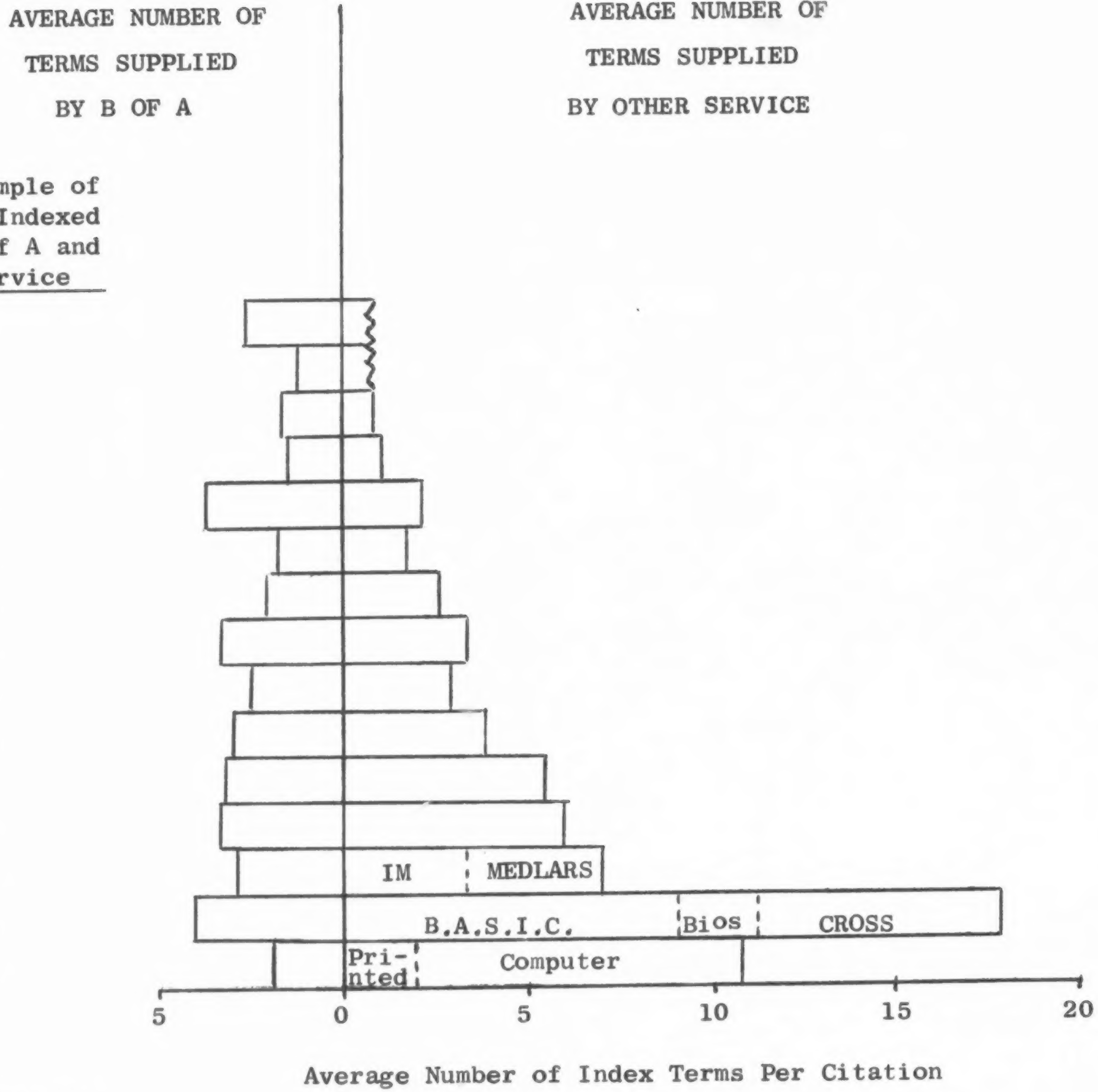
B OF A SEQUENCE NUMBER 522[illegible]
TITLE                  MICROBIOLOGICAL TEST FOR THE DETERMINATION OF PENICILLIN AND OTHER ANTIBIOTICS IN MILK.
B OF A SECTION HEADING AGRICULTURAL PRODUCTS - DAIRY PRODUCTS - ANALYSIS AND COMPOSITION
PDB SECTION HEADING
B OF A INDEX TERMS     ANTIBIOTICS   IN MILK * PENICILLIN   IN MILK * MICROBIOLOGY * MILK   ANALYSIS
PDB INDEX TERMS        MICROBIOLOGICAL * PENICILLIN * ANTIOBOTICS * MILK * DETERMINATION

B OF A SEQUENCE NUMBER 523[illegible]
TITLE                  SPECIFIC DETERMINATION OF NITROFURANS IN FEEDS CONTAINING INTERFERING PIGMENTS.
B OF A SECTION HEADING AGRICULTURAL PRODUCTS - FEED AND FORAGE CROPS
PDB SECTION HEADING
B OF A INDEX TERMS     PIGMENTS   PLANTS * FEED   ANALYSIS * NITROFURAN COMPOUNDS   IN FEED
PDB INDEX TERMS        NITROFURANS * FEEDS * PIGMENTS * DETERMINATION * INTERFERING
```

Fig. 7c

Examples of Computer Printouts
of Index Terms Contributed by
B of A and Other Services
to the Same Document

Service	Term Ratio (Total Number of Other Service's Terms ÷ Total No. of B of A Terms)	Size of Sample of Citations Indexed by Both B of A and Other Service
BAI	—	378
PAIS	—	16
EI	0.48	29
WAERSA	0.51	79
TA	0.66	27
TTD*	0.74	33
MGA	0.93	5
IM*	1.02	306
DSA	1.05	72
HA	1.31	138
CA	1.61	591
PDB	1.67	897
IM*	2.25	306
BA	4.68	752
TTD*	4.73	33



*Shown in rank order in two places: for the published issues only, and for the service as a whole including the computer data bank.

Fig. 8

Relative Number of Subject Access Points Per Citation Provided by B of A and 13 Other Services for the Same Citations

		B OF A		OTHER SERVICE		
Service	Size of Sample of Citations Indexed by Both B of A and and This Service	Number of Index Terms Applied to These Citations	Average Number of Terms per Citation	Number of Index Terms Applied to These Citations	Average Number of Terms per Citation	Term Ratio (Total No. of Other Service's Terms ÷ Total No. of B of A Terms)
BA	752	2,889	3.84			
B.A.S.I.C.				7,111	9.46	2.46
Biosystematic				1,231	1.64	0.43
CROSS				5,158	6.86	1.79
Total				13,500	17.95	4.68
BAI	378	1,095	2.90	378	1.00+*	—
CA	591	2,028	3.43	3,260	5.52	1.61
DSA	72	206	2.86	216	3.00	1.05
EI	29	60	2.07	29	1.00**	.48
FA	Index terms unavailable for this study.					
HA	138	412	2.99	541	3.92	1.31
IM	306	937	3.06			
IM				956	3.12	1.02
MEDLARS (terms added to IM terms)				1,153	3.76	1.23
Total				2,109	6.89	2.25
IV	Index terms unavailable for this study.					
MGA	5	14	2.80	13	2.60	.93
PDB	897	3,214	3.58	5,359	5.97	1.67
PAIS	16	24	1.50	16	1.00+*	—
TTD	33	74	2.24			
Printed				55	1.67	.74
Computer				295	8.94	3.99
Total				350	10.61	4.73
TA	27	100	3.70	66	2.44	.66
WAERSA-old system	79	163	2.06	83	1.05	.51
WAERSA-new system***	79	163	2.06	83	1.05	.51

*Citations may be listed under more than one access point, however for this study the searchers stopped looking after they found the first one.

**EI by design only includes a citation under one subject heading.

***WAERSA provided indexing for these citations as done by both the present system and their proposed new system.

Table VIII

Relative Number of Subject Access Points Per Citation Provided by B of A and 13 Other Secondary Services for the Same Citations felt would be the most revealing was a comparison, on an article-by-article basis, of the terms that were actually applied to the same document by B of A and the other services. To our knowledge this had not been done to any extent in prior studies, although one recent article reviewed the indexing coverage given to four B of A citations by several services, and made some general statements in conclusion,* and another study listed the index headings in B of A and other services under which a group of citations were found.** It was our hope that a methodology could be developed by which some absolute and objective measures could be established to describe the degree and type of relationship between assigned indexing terms. To our knowledge, such measures or procedures had not been developed or suggested prior to this study.

Considerable effort was spent in planning and testing such a methodology to be used to describe the relationship of terms assigned by multiple services to the same document. Particular emphasis was placed on developing some normalized numeric measure that would: (1) have meaning independent of the sample size used or the particular services studied; (2) be repeatable by other experimenters; and (3) permit direct comparison of several services. Initial efforts were concentrated on developing such a procedure for a two-service situation, with the understanding that the procedure could be generalized to more than two indexing services if desired. Variation in technique was necessary to cover the wide difference between single- and multiple-term indexing. The developed measure is believed to be satisfactory, and yields results indicative of the relationship of the various indexing services studied. However, the difficulty in making objective and consistent judgments about subject terms is not to be underestimated. While consistency can be checked to some extent by duplication of efforts by several workers, objectivity cannot be assured without further studies of how the particular indexes are used.

b. The Relationship Matrix and Measure

The procedure finally adopted for this study involved the use of a relationship matrix which displayed, for a given citation, the subject index terms applied to it by B of A and one other service. Examples of such matrix worksheets and the index terms provided by several services are shown in Figs. 9a-h. Using the indexing information arranged on such worksheets, a research analyst worked on one citation at a time to: (1) compare each term of one service against each of the other terms assigned by the second service; (2) make a judgment of the degree of association (e.g., terms not judged to be of A No. 460

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* Bystrom, Marcia. "Agricultural Information: Can You Find It With the Index?" Special Libraries, v. 59, no. 9, November 1968, pp. 712-717.

**Martyn, J. and M. Slater. "Tests on Abstract Journals," Journal of Documentation, v. 22, no. 4, December 1964, pp. 212-235; v. 23, no. 1, March 1967, pp. 45-70

BA

B of A	ECONOMY	FRUIT	PRODUCTION	COSTS	RETURNS	COOPERATION	SPAIN	BOOK	(NONE)	HORTICULTURE - GEN			
UIT, COSTS, SPAIN	IIi	Ib	III	IIa	III	III	IIa	III		II3			
UIT, RETURNS, SPAIN	IIi	Ib	III	III	IIa	III	IIa	III		II3			
UIT, COOPERA-IVES, SPAIN	IIi	Ib	III	III	III	IIa	IIa	III		II3			
OPERATIVE RGANIZATIONS, FRUIT, SPAIN	IIi	IIa	III	III	III	Ib	IIa	III		II3			
BLIOGRAPHICS, RUIT RETURNS	IIi	IIa	III	III	IIa	III	III	IIe		II3			
BLIOGRAPHIES, FRUIT COOPERATIVES	IIi	IIa	III	III	III	IIa	III	IIe		II3			

Fig. 9a

Examples of Relationship Matrix Worksheets

Number of index terms:
B of A 6
Other service 8
0
1

Relationships:

I a 0	I 1	III 21		
b 4	2			
II a 12	3	IV		
b	4			
c	5	TOTAL: 45	0	1
d	6			
e 2	II 1			
f	2			
g	3 6			
h	4			
i 6	5			
BASIC	[illegible] 6 CROSS	BASIC	B.C	CROSS

B of A No. 44500 DSA B of A	BREEDING	BULLS	JERSEY CATTLE	USSR									
CATTLE, FARMS, USSR	III	II e.	II b	II a									
BULLS, AND HEREDITY	II e.	I b	II e.	III									
CATTLE, BREEDING, USSR	II a	II e	II h	II a									

Fig. 9b

Examples of Relationship Matrix Worksheets

Number of index terms:	Relationships:		
B of A 3	I a	I 1	III 2
Other service 4	b 1	2	
	II a 3	3	IV
	b	4	
	c	5	TOTAL: 12
	d	6	
	e 4	II 1	
	f	2	
	g	3	
	h 2	4	
	i	5	
		6	

f A No. 4400

PDB

B of A	EXCRETA	SPIDERS
DERS, XCRETION	IIa	Ib
RETA, PIDERS	Ib	IIa

Fig. 9c
Examples of Relationship
Matrix Worksheets

Number of index terms:	
B of A	2
Other service	2

Relationships:

I a
b 2
II a 2
b
c
d
e
f
g
h
i

I 1
2
3
4
5
6
II 1
2
3
4
5
6

III

IV

TOTAL: 4

of A No. 66000 TTD B of A	WOOL-YELLOWING, SUNLIGHT, SURVEY FOR INHIBITORS	PHOTOCHEMICAL DEGRADA-TION - WOOL YELLOWING, INHIBITION STUDY	TEXTILE RESEARCH J.	YELLOWING	WOOL	EXPERIMENTAL	RETARDANTS	PADDING	FABRICS	PHOTOCHEMICAL DEGRADATION	SUNLIGHT	LIGHT	COMPARISONS	VISUAL EVALUATION	COLOR MEASUREMENT	REFLECTANCE			
AR RADIATION, EFFECTS ON WOOL	II 2	II 6	III	III	IIa	III	III	III	IIi	III	IId	IIe	III	III	III	IIe			
L, DISCOLORATION	I 2	II 2	III	IIc	Ib	III	III	III	II1	III	III	III	III	III	IIe	III			

Fig. 9d

Examples of Relationship Matrix Worksheets

Number of index terms:		Relationships:					
B of A	2	I a		I 1		III	19
Other service	2	b	1	2	1		
	14	II a	1	3		IV	
		b		4			
		c		5		TOTAL: 4	28
		d	1	6			
		e	4	II 1			
		f		2	2		
		g		3			
		h		4			
		i	2	5			
				6	1		

B of A No. 39480

CA

B of A	CARROTS-CALLUS INITIATION FROM TAPROOT OF	TISSUE, PLANT-PHLOEM, CALLUS INITIATION FROM CARROT TAPROOT
PHLOEM, CARROTS	II6	II2
CARROTS, CYTOLOGY	I2	II2
CALLUS, CARROTS	II2	II2
TISSUE CULTURE, CARROTS	II6	I2

Fig. 9e
Examples of Relationship
Matrix Worksheets

Number of index terms:
B of A 4
Other service 2

Relationships:

I a	I 1	III	
b	2	2	
II a	3	IV	
b	4		
c	5	TOTAL: 8	
d	6		
e	II 1		
f	2	4	
g	3		
	4		
	5		
	6	2	

B of A No. 52540 HA B of A	CHROMATOGRAPHIC METHODS IN RESIDUE ANALYSIS ON CROPS	INSECTICIDES, RESIDUES and their ANALYSIS	BEAN (PHASEOLUS), SPRAY RESIDUES AND OTHER CHEMICAL	RESIDUES AND RETENTION									
BEANS, PROCESSING	III	III	I 6										
DDT, IN BEANS	III	II 3	II 3										
DDT, RELATED COMPOUNDS	III	II 3	III										
BEANS, CONTAMINATION	III	III	I 2										

Fig. 9f

Examples of Relationship Matrix Worksheets

Number of index terms:
B of A 4
Other service 3

Relationships:
I a
b
II a
b
c
d
e
f
g
h
i

I 1
2 1
3
4
5
6 1
II 1
2
3 3
4
5
6

III 7
IV
TOTAL: 12

of A No. 20840 IM B of A	GOLGI APPARATUS	OSTEOBLASTS/ CYTOLOGY	OSTEOGENESIS	ANIMAL EXPERIMENTS	CHICK EMBRYO	GOLGI APPARATUS	MICROSCOPY, ELECTRON	OSTEOBLASTS/ CYTOLOGY	OSTEOGENESIS				
MICROSCOPY, ELECTRON, IN POULTRY RESEARCH	III	III	III	II 3	III	III	I 3	III	III				
BONES, POULTRY	III	II 6	II 5	II 6	II 6	III	III	II 6	II 5				
CHICK EMBRYOS, PHYSIOLOGY	III	III	III	II 6	I 3	III	III	III	III				

Fig. 9g

Examples of Relationship Matrix Worksheets

Number of index terms:

B of A	3
Other service	3
	6

Relationships:

I a	I 1			III	7	10
b	2					
II a	3		2	IV		
b	4					
c	5			TOTAL:	9	18
d	6					
e	II 1					
f	2					
g	3		1			
h	4					
i	5	1	1			
	6	1	4			
		IM	MEDLARS		IM	MEDLARS

f A No. 57440 TA B of A	Nicotinamide Adenine Nucleotide & Nicotine precursor	Nicotiana rustica nicotinamide adenine dinucleotide	Ricine Biosynthesis										
ec tobacco, iochemistry	II 6	II 2	III										
otine, in tec tobacco	I 2	I 2	III										
otinamide Adenine ucleotides, in tec tobacco	I 5	I 4	III										

Fig. 9h
Examples of Relationship
Matrix Worksheets

ztec tobacco = nicotiana rustica

Number of index terms:
B of A 3
Other service 3

Relationships:
I a
b
II a
b
c
d
e
f
g
h
i

I 1
2 2
3
4 1
5 1
6
II 1
2 1
3
4
5
6 1

III 3
IV
TOTAL: 9

alphabetically identical) for each of the term pairs; and (3) annotate the matrix for the corresponding term-pair. A list of possible types of meaningful term pair associations was developed and used for this purpose in order to ensure rigor and consistency in the judgments and identification of term associations. Much of the judging was done by research analysts who had a general knowledge of the subjects. Another research analyst, a librarian who was even more familiar with classification and indexing techniques, reviewed all of the judgments and made some additional ones.

The types of term-pair relationships and associations that were defined and used in this study depended somewhat on the type of indexing performed by the particular service being studied. For example, some types of relationships were possible with hierarchical systems that had no counterparts in coordinate or keyword indexing systems and vice versa. For this reason, two separate lists of possible relationships were established for use by the research analysts: one for services with single term index entries, and one for services with multiple term or hierarchical index entries. The first list (for indexes with single-term entries) was used on comparing BA B.A.S.I.C. and Biosystematic indexes, DSA, PDB, and TTD computer index terms with B of A. (As printed, the BA Biosystematic index and DSA's subject index contain multiple term entries, but only single terms were supplied by the services to IGC.) The second list was used in comparing BA CROSS index, BAI, CA, EI section headings, HA, IM MEDLARS, MGA, PAIS, TA, TTD printed index, and WAERSA index terms with B of A.

After analysis using these two separate lists, a combined or composite list was created, as shown in Table IX, to show all possible relationships noted in the analysis of both types of index terms.

The variations allowed in the determination of alphabetical identity are listed in Table X.

In the transcription of hierarchical index terms, commas, hyphens, and slashes were all used by the various services to denote different hierarchical levels. These punctuation marks were also ignored in this analysis.

c. Sample Size

At least twenty documents with joint indexing (i.e., documents indexed by both B of A and one of the other services) were studied for each service unless that number of documents was unavailable. The specific documents in the sample of twenty were selected by a uniform sampling of the available population of jointly indexed documents (e.g., every 15th IM citation of the jointly-indexed population was selected). It was felt that this sample size would provide a good test of the procedure, as well as a relatively stable estimate of the measure of relationship. A total of 305 instances of documents with joint indexing are still available in the data base for further study in this manner by IGC at a later date.

I. Same alpha entry, with allowable variations

- Whole term identical, with allowable variations (Ia I1)
- B of A more general; other service has more terms, or more specific terms following alpha entry (I2)
- B of A more specific; B of A has more terms, or more specific terms following alpha entry (Ib I3)
- Equal level of indexing
    - Terms following alpha entry are synonymous (I4)
    - Terms following alpha entry are not synonymous (I5)
- Relationship of terms following alpha entry is not ascribable to above categories (I6)

II. Different alpha entry; concept of alpha entry related to a concept in terms of contrasted service

- B of A more general; other service more specific (IIf II2)
- B of A more specific; other service more general (IIi II3)
    - Single word or term of other service is identical with a term following the B of A alpha entry term (IIa)
    - Single word or term of other service is synonymous with a term following the B of A alpha entry term (IIc)
    - Single word or term of other service is synonymous with first word of B of A term; B of A has succeeding term(s) IId)
- Equal level of indexing
    - Terms are synonymous (IIb II4)
    - Terms are inverted (II1)
    - Terms are not synonymous (II5)

Table IX

Classes of Relationships Noted in Comparing Index Terms Assigned by Two Services to the Same Document

.   Relationship of terms is not ascribable to above categories (IIe II6)

    :   Single word or term of other service is a subset of a term following the B of A alpha entry term (II g)

    :   Single word or term of other service is a subset of the first word of B of A term; B of A has succeeding term(s) (IIh)

III. No relation between two particular terms

IV Relation undetermined because outside subject competence of analyst

Table IX (Concluded)

Classes of Relationships Noted in Comparing Index Terms Assigned by Two Services to the Same Document

- Variant spellings of the same word
  - gray vs grey
  - color vs colour
  - litchee vs lychee
- Word plurals
  - nut vs nuts
- Word form
  - package vs packaging
  - vibrio vs vibrionic
  - arachnids vs arachnida
- Punctuation and special characters
  - sub-tropical vs subtropical
  - leaf, diseases vs leaf diseases
- Articles
  - vines and nuts vs vines, nuts
  - fleas in fruit vs fleas, fruit
- Abbreviations
  - lawns, etc., diseases vs lawns, diseases
  - pereskiopsis vs pereskiopsis spp.
  - US vs United States

Table X

Variations Allowed in Determining Identical Index Terms Assigned by Two Services to the Same Document

d. Source Data

The original working documents used to provide the source data for this part of the study were the series of computer printouts of the citations jointly indexed by B of A and the other services. A few examples of such printouts were shown in Fig. 7a-d.

2. Findings

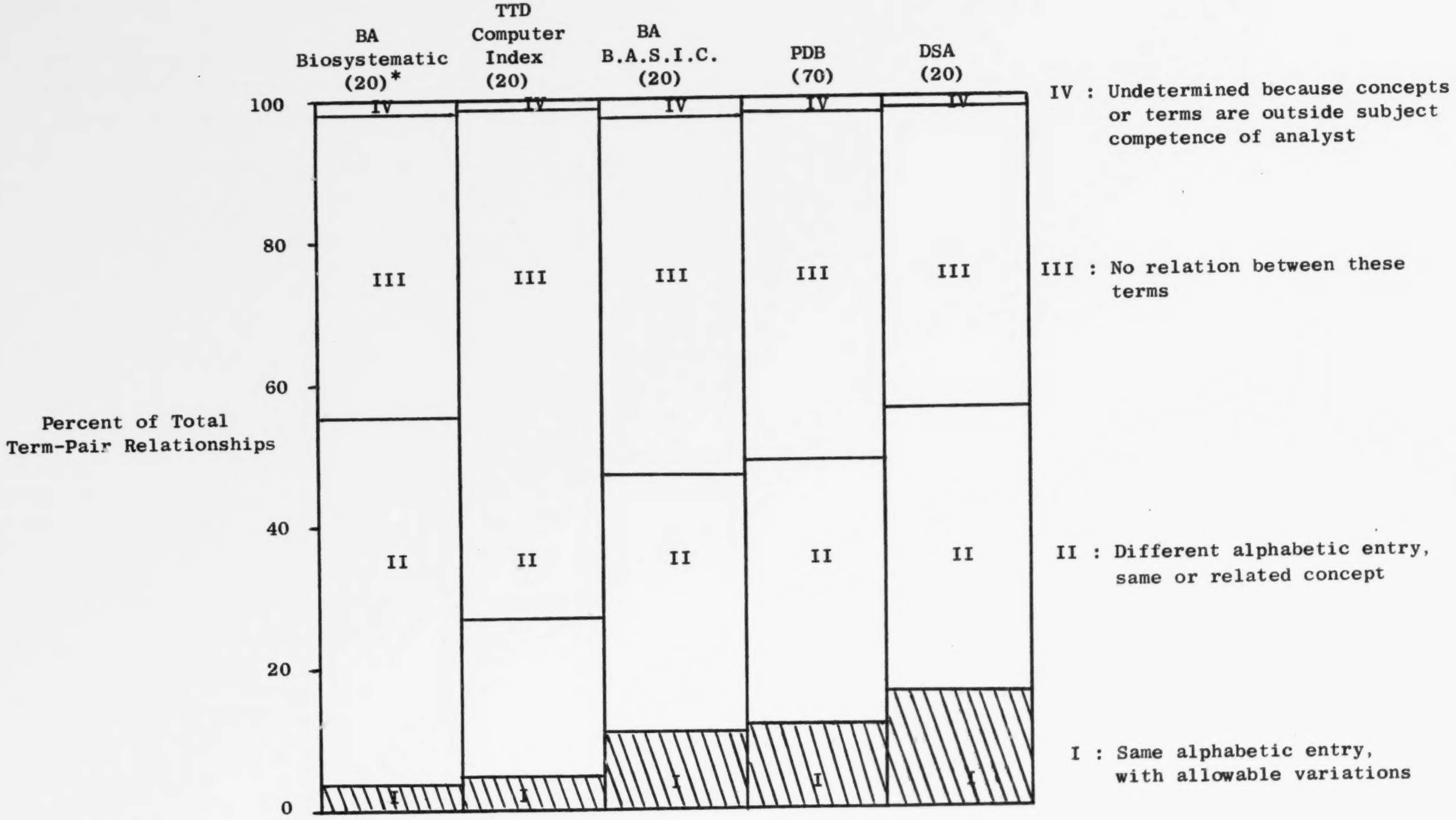
a. Services With Single Term Index Entries

The detailed analysis of the index terms applied by two services to the same document, using the relationships listed earlier in Table IX, yielded the data illustrated in Figs. 10a-c, and summarized in Table XI. These data are given in terms of numbers and percentages of the possible term-pair relationships (i.e., each term of B of A compared with each term supplied by the other service for the same document) that were of each of the four types described in Table IX. These data lead to the following specific observations for the comparison of B of A with the BA B.A.S.I.C. and Biosystematic indexes, the indexes for DSA and PDB, and the TTD computer index:

> Depending on the service, 4 to 16 percent of the term-pairs studied were entered under alphabetically identical terms, i.e., the first word of B of A's term was alphabetically identical to the single term used by the other service, assuming the allowable variations of the types noted in Table X. An average of 10 percent of all the term-pairs analyzed for each of the services had the same alphabetic entry in this way. An average of only one half of the one percent of all the term-pairs were completely identical, i.e., B of A used an identical single term index entry, with no terms following the entry term. (See Fig. 10a and Type I relationships in Table XI).
>
> From 28 to 56 percent of the term-pairs studied were of the same or related concepts. An average of 46 percent of all of the term-pairs analyzed for each of these services were of the same or related concepts. (See Fig. 10b)
>
> From 43 to 71 percent of the term-pairs studied were unrelated in concept. An average of 52 percent of all of the term-pairs analyzed for each of these services were unrelated in concept. (See Fig. 10c)

b. Services With Multiple or Hierarchical Term Index Entries

The term-pairs for these services were analyzed in the same manner as done for the single-term services described in the previous section.

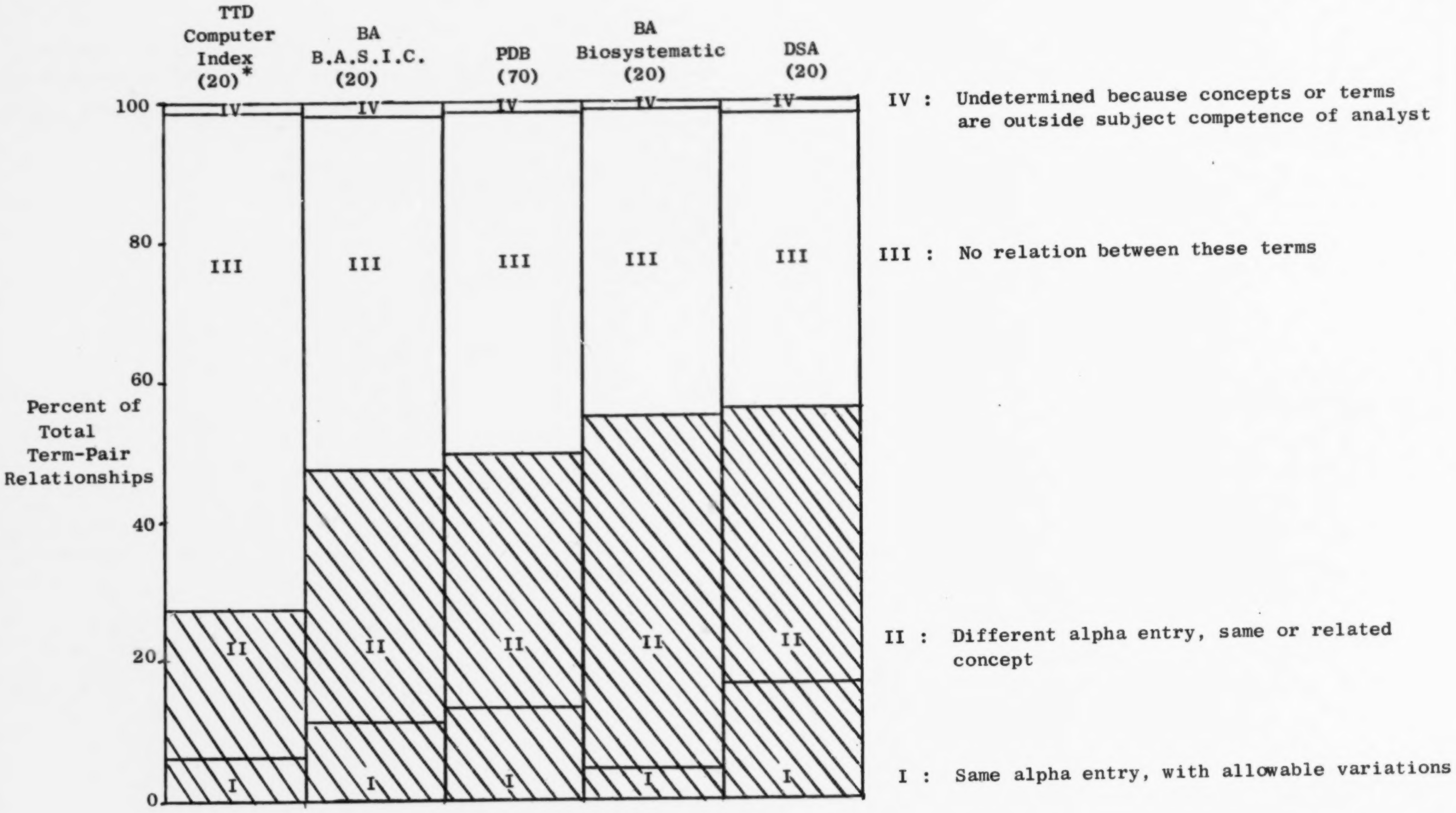


Ranked by increasing percent of Class I (same alphabetic entry) relationships

* The numbers in parentheses refer to the number of citations sampled from the file of jointly-covered citations, and used for this analysis.

Fig. 10a

Index Term Relationships Observed in Citations Indexed Jointly by B of A and Other Services That Use Single Term Index Entries

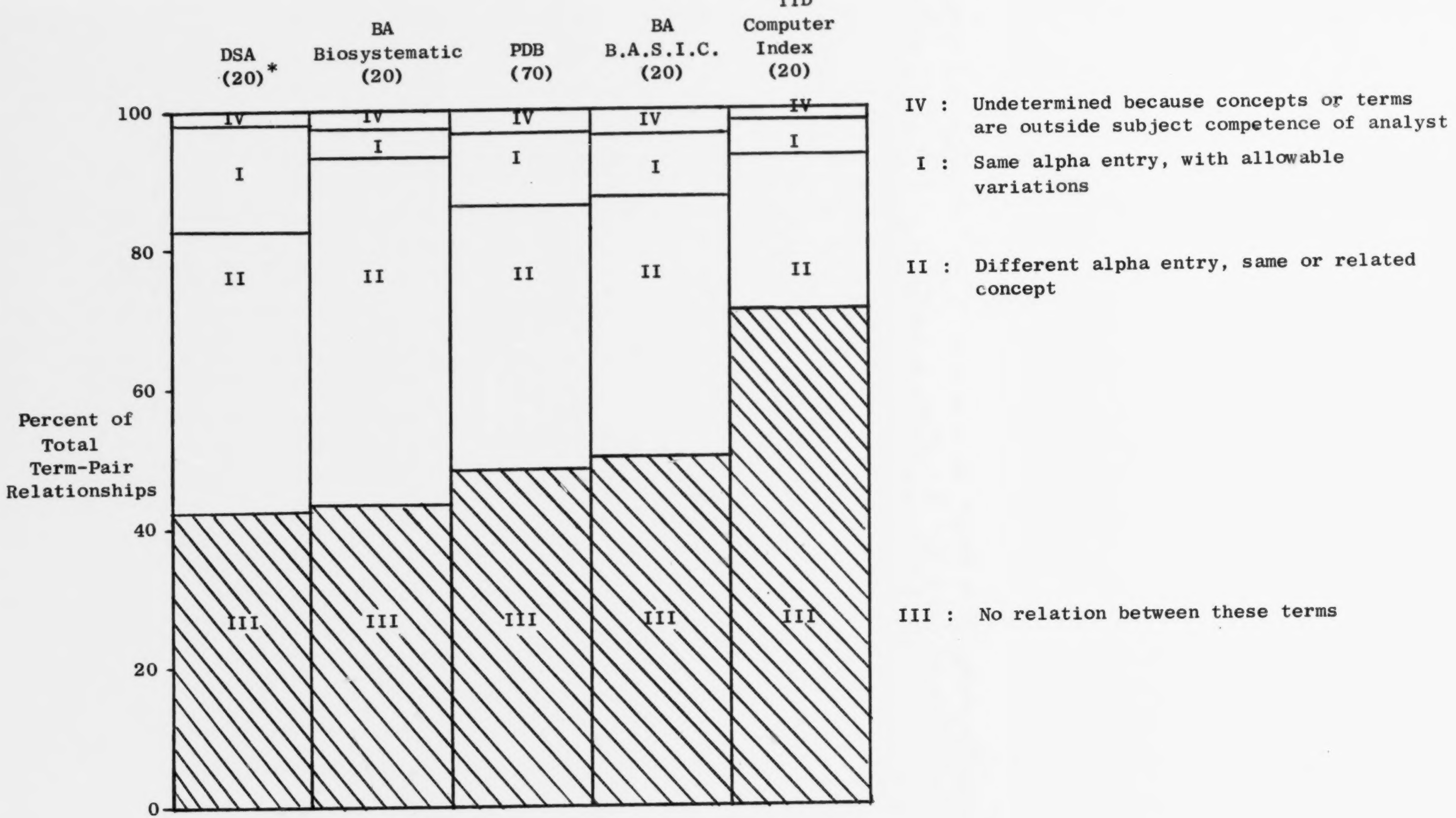


Ranked by increasing percent of related terms (class I and class II)

* The numbers in parentheses refer to the number of citations sampled from the file of jointly covered citations, and used for this analysis.

Fig. 10b

Index Term Relationships Observed in Citations Indexed Jointly by B of A and Other Services That Use Single Term Index Entries



Ranked by increasing percent of class III: no relation between terms

* The numbers in parentheses refer to the number of citations sampled from the file of jointly covered citations, and used for this analysis.

Fig. 10c

Index Term Relationships Observed in Citations Indexed Jointly
by B of A and Other Services That Use Single Term Index Entries

Type of Relationship	BA B.A.S.I.C. (20)*		BA Biosystematic (20)		DSA (20)		PDB (70)		TTD (20) Computer Index		Combined Data	
	Total No. of Occurrences	% of Total	Total No. of Occurrences	% of Total	Total No. of Occurrences	% of Total	Total No. of Occurrences	% of Total	Total No. of Occurrences	% of Total	Total No. of Occurrences	% of Total
I. Same alpha entry, with allowable variations	53	10.82	4	3.74	28	15.91	166	11.95	21	4.95	272	10.52
a. Identical, with allowable variations	-		-		1		10		3		14	0.54
b. B of A more specific	53		4		27		156		18		258	9.98
II. Different alpha entry, same or related concept	180	36.73	55	51.40	70	39.77	518	37.29	96	22.64	919	35.54
a. Other term identical with term after B of A entry	50		3		19		171		14		257	9.94
b. Other term synonymous with whole B of A term	-		-		5		2		1		8	0.31
c. Other term synonymous with term after B of A entry	12		7		2		11		2		34	1.32
d. Other term synonymous with B of A entry term	8		1		1		58		5		73	2.82
e. Relationship not ascribable to other categories	58		2		13		138		36		247	9.55
f. Other term more specific than B of A term	-		-		1		2		-		3	0.12
g. Other term a subset of term after B of A entry	14		2		11		37		3		67	2.59
h. Other term a subset of B of A entry term	7		1		17		41		30		96	3.71
i. Whole B of A term more specific than other term	31		39		1		58		5		134	5.18
III. No relation between these terms	244	49.79	46	42.99	75	42.61	674	48.52	301	70.99	1,340	51.82
IV. Undetermined because concepts or terms are outside subject competence of analyst	13	2.66	2	1.87	3	1.71	31	2.24	6	1.42	55	2.12
Total:	490	100.00	107	100.00	176	100.00	1,389	100.00	424	100.00	2,586	100.00

*The numbers in parentheses refer to the number of citations sampled from the file of jointly covered citations and used in this analysis.

Table XI

Index Term Relationships Observed in Citations Indexed Jointly by B of A and Other Services That Use Single Term Index Entries

The resulting data are illustrated in Figs. 11a-c, and summarized in Table XII. These data led to the following specific observations for the comparison of B of A with the indexes for BAI, CA, EI, HA, MGA, PAIS, TA, the BA CROSS index, the TTD printed index, WAERSA's old and new indexing systems; and IM MEDLARS* terms:

> Depending on the service, 0 to 37 percent of the term-pairs studied were entered under alphabetically identical terms, i.e., at least the entry words of both terms in a pair were alphabetically identical, assuming the allowable variations of the types noted in Table X. An average of 13 percent of all the term-pairs analyzed for these services had the same alphabetic entry. An average of only one half of one percent of all the term-pairs were completely identical, i.e., not only the entry word but also all the terms following it were alphabetically identical. (See Fig. 11a and Type I relationships in Table XII)
>
> From 44 to 98 percent of the term-pairs studied were of the same or related concepts. An average of 66 percent of all of the term-pairs analyzed for each of these services were of the same or related concepts. (See Fig. 11b)
>
> From 2 to 54 percent of the term-pairs studied were unrelated in concept. An average of 30 percent of all of the term-pairs analyzed for each of the services were unrelated in concept. (See Fig. 11c)

c. Combined Data

A composite summary of the term-pair data for all of the services is given in Fig. 12.

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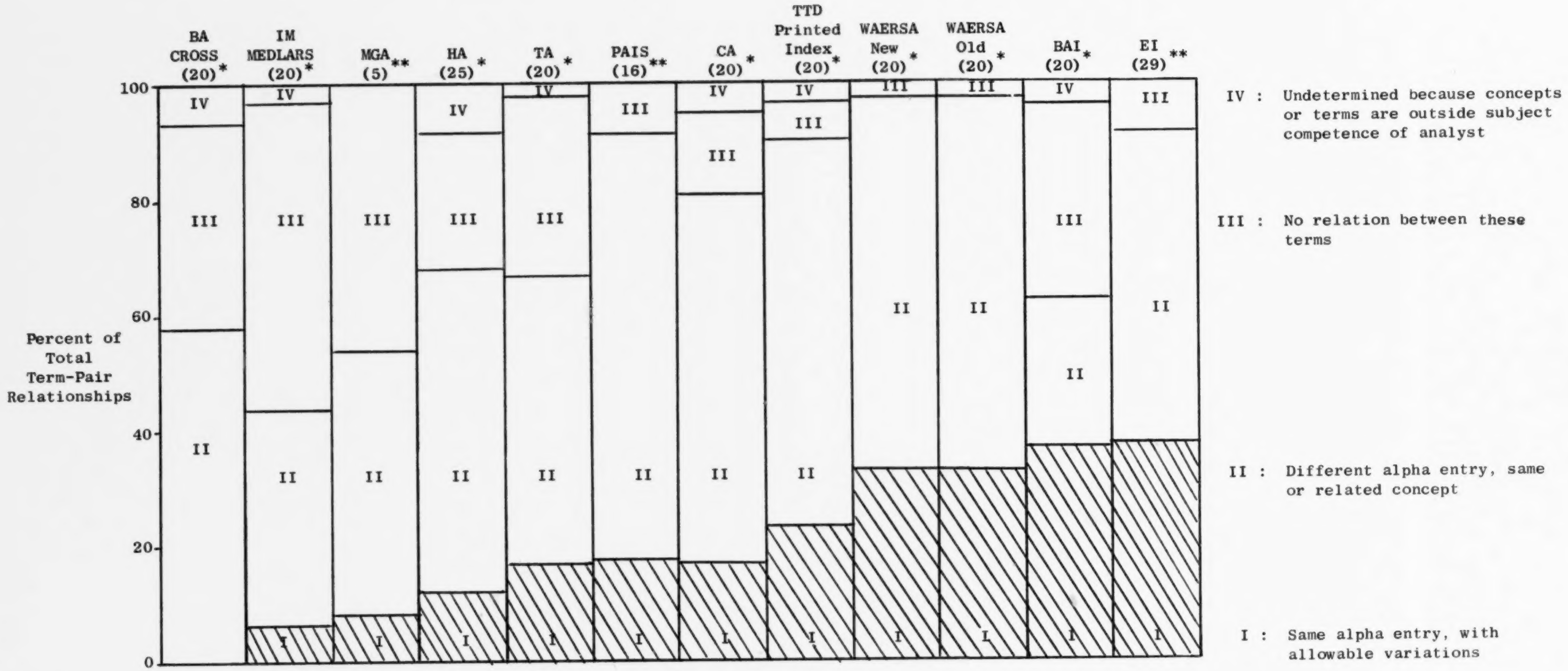
* In this section, "IM MEDLARS" refers to the total number of terms supplied by NLM, with no distinction as to which terms appeared in the printed IM.



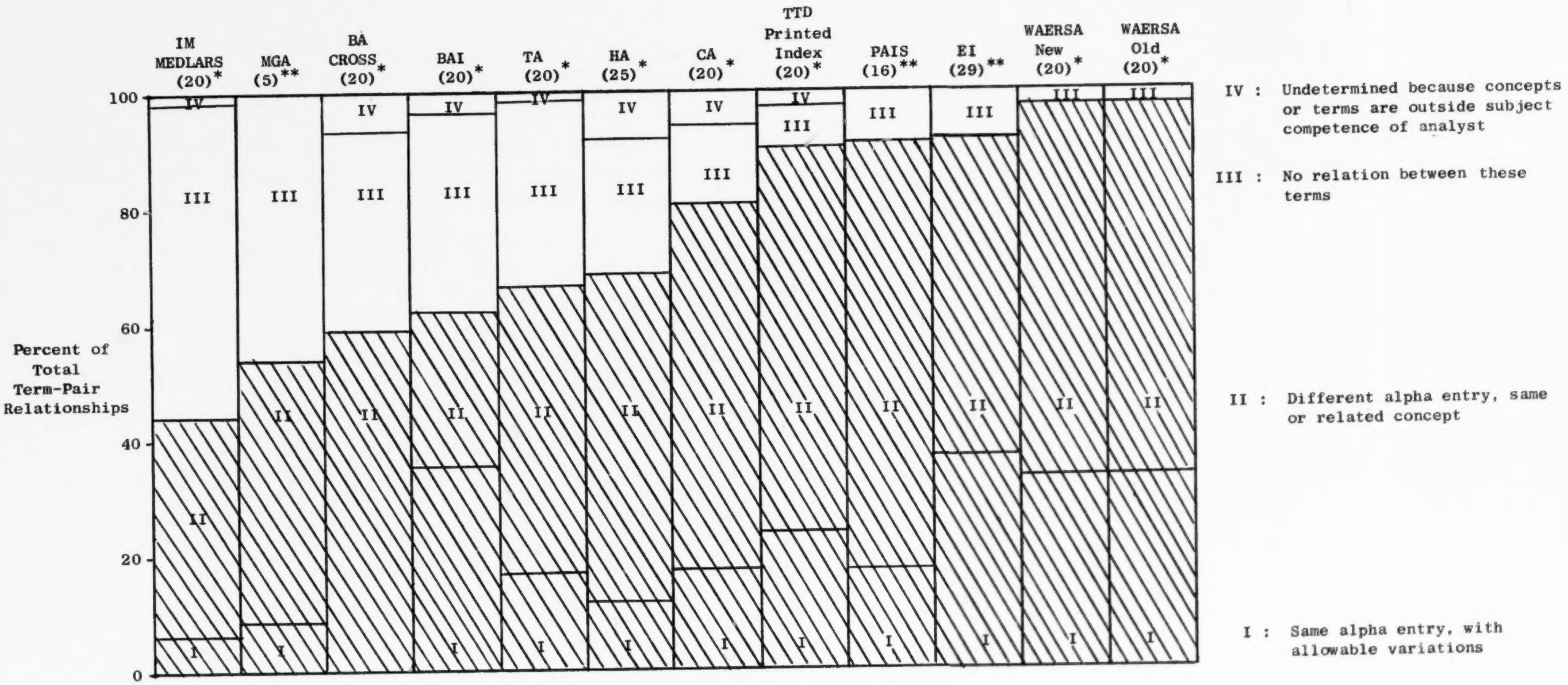
Ranked by increasing percent of class I (same alpha entry) relationships

*The numbers in parentheses refer to the number of citations sampled from the file of jointly covered citations, and used for this analysis.

**The numbers in parentheses refer to the total number of jointly covered citations available in the file, and used for this analysis.

Fig. 11a

Index Term Relationships Observed in Citations Indexed Jointly by B of A and Other Services That Use Hierarchical or Multiple Term Index Entries



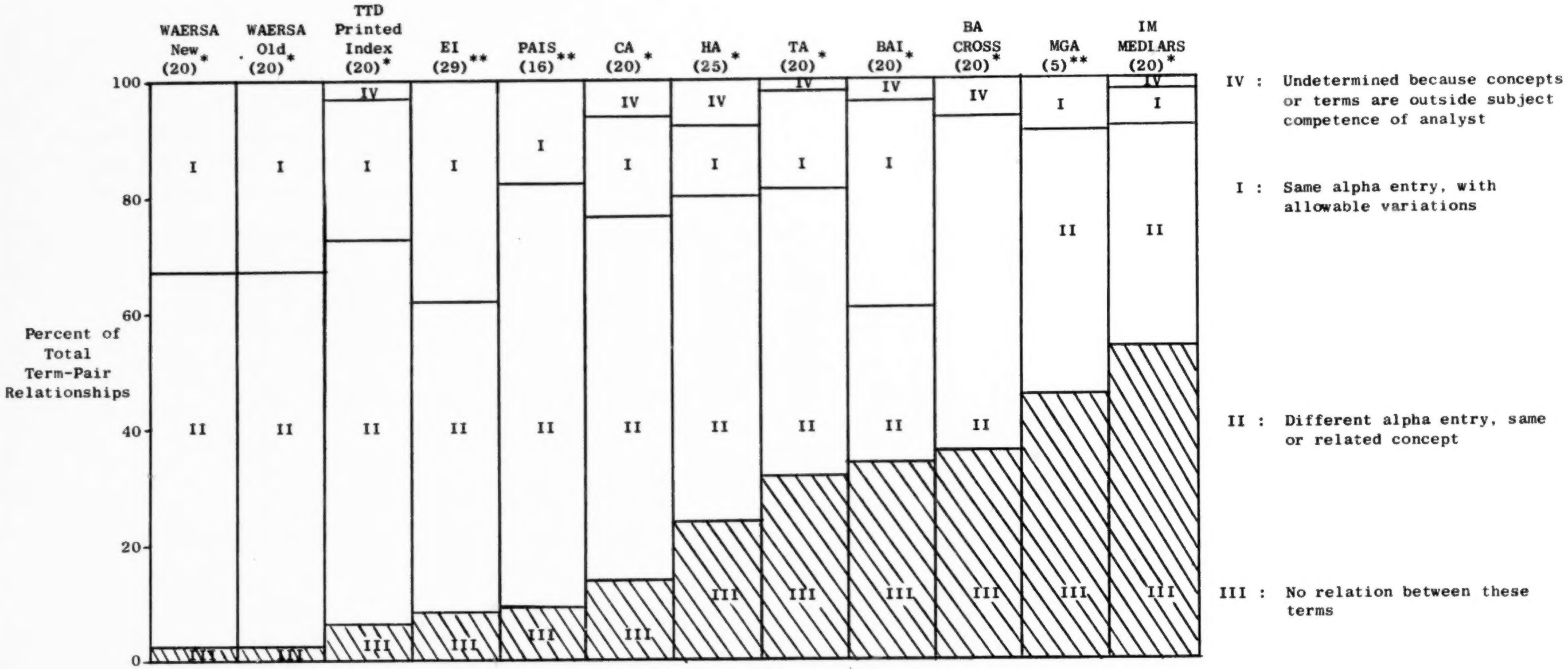
Ranked by increasing percent of related terms (class I and class II)

*The numbers in parentheses refer to the number of citations sampled from the file of jointly covered citations, and used for this analysis.

**The numbers in parentheses refer to the total number of jointly covered citations available in the file, and used for this analysis.

Fig. 11b

Index Term Relationships Observed in Citations Indexed Jointly by B of A and Other Services That Use Hierarchical or Multiple Term Index Entries



Ranked by increasing percent of class III: no relation between terms

*The numbers in parentheses refer to the number of citations sampled from the file of jointly covered citations, and used for this analysis.

**The numbers in parentheses refer to the total number of jointly covered citations available in the file, and used for this analysis.

Fig. 11c

Index Term Relationships Observed in Citations Indexed Jointly by B of A and Other Services That Use Hierarchical or Multiple Term Index Entries

	BA CROSS* (20)		BAI* (20)		CA* (20)	
Type of Relationship	Number of Occurrences	Percent of Total Occurrences	Number of Occurrences	Percent of Total Occurrences	Number of Occurrences	Percent of Total Occurrences
I. Same alpha entry, with allowable variations	-	-	20	35.71	39	17.81
1. Identical, with allowable variations	-		3		-	
2. B of A more general	-		1		32	
3. B of A more specific	-		13		-	
4. Terms after entry are synonymous	-		-		-	
5. Terms after entry are not synonymous	-		2		2	
6. Not ascribable to above categories	-		1		5	
II. Different alpha entry, same or related concept	210	58.82	15	26.79	137	62.56
1. Terms are inverted	-		1		0	
2. B of A more general	1		1		82	
3. B of A more specific	100		4		5	
4. Equal level of indexing, synonymous	1		1		1	
5. Equal level of indexing, not synonymous	8		4		15	
6. Not ascribable to above categories	100		4		34	
III. No relation between those terms	125	35.02	19	33.93	32	14.61
IV. Undetermined because concepts or terms are outside subject competence of analyst	22	6.16	2	3.57	11	5.02
Total:	357	100.00	56	100.00	219	100.00

*The numbers in parentheses refer to the number of citations sampled from the file of jointly covered citations and used in this analysis.

Table XII

Index Term Relationships Observed in Citations Indexed Jointly by B of A and Other Services That Use Hierarchical or Multiple Term Index Entries

	EI ** (29)		HA * (25)		IM MEDLARS (20)*		MGA** (5)		PAIS** (16)	
Type of Relationship	Number of Occurrences	Percent of Total Occurrences	Number of Occurrences	Percent of Total Occurrences	Number of Occurrences	Percent of Total Occurrences	Number of Occurrences	Percent of Total Occurrences	Number of Occurrences	Percent of Total Occurrences
I.	22	37.29	46	12.30	22	6.51	3	8.58	4	17.39
1.	2		1		1		-		-	
2.	1		18		2		1		-	
3.	11		9		10		-		1	
4.	2		2		-		-		1	
5.	5		12		8		2		2	
6.	1		4		1		-		-	
II.	32	54.24	209	55.88	127	37.57	16	45.71	17	73.91
1.	2		1		-		-		3	
2.	1		46		2		2		1	
3.	13		41		68		3		3	
4.	1		1		-		-		1	
5.	10		63		34		4		4	
6.	5		57		23		7		5	
III.	5	8.47	91	24.33	183	54.14	16	45.71	2	8.70
IV.	-	-	28	7.49	6	1.78	-	-	-	-
Total:	59	100.00	374	100.00	338	100.00	35	100.00	23	100.00

*The numbers in parentheses refer to the number of citations sampled from the file of jointly covered citations and used in this analysis.

**The numbers in parentheses refer to the total number of jointly covered citations available in the file and used for this analysis.

Table XII (continued)

Index Term Relationships Observed in Citations Indexed Jointly by B of A and

Other Services That Use Hierarchical or Multiple Term Index Entries

Type of Relationship	TTD Printed Index (20)*		TA (20)*		WAERSA New System (20)*		WAERSA Old System (20)*		Combined Data	
	Number of Occurrences	Percent of Total Occurrences	Number of Occurrences	Percent of Total Occurrences	Number of Occurrences	Percent of Total Occurrences	Number of Occurrences	Percent of Total Occurrences	Number of Occurrences	Percent of Total Occurrences
I.	18	23.68	38	17.12	15	33.33	15	33.33	242	13.09
1.	-		-		1		2		10	0.54
2.	9		20		3		2		89	4.81
3.	-		4		2		2		52	2.81
4.	1		1		-		-		7	0.38
5.	3		7		6		6		55	2.98
6.	5		6		3		3		29	1.57
II.	51	67.10	109	49.09	29	64.45	29	64.45	981	53.05
1.	-		-		1		-		8	0.43
2.	43		45		6		7		237	12.81
3.	-		5		5		5		252	13.63
4.	1		-		-		-		7	0.38
5.	-		12		6		6		166	8.98
6.	7		47		11		11		311	16.82
III.	5	6.58	71	31.98	1	2.22	1	2.22	551	29.80
IV.	2	2.64	4	1.81	-	-	-	-	75	4.06
Total:	76	100.00	222	100.00	45	100.00	45	100.00	1,849	100.00

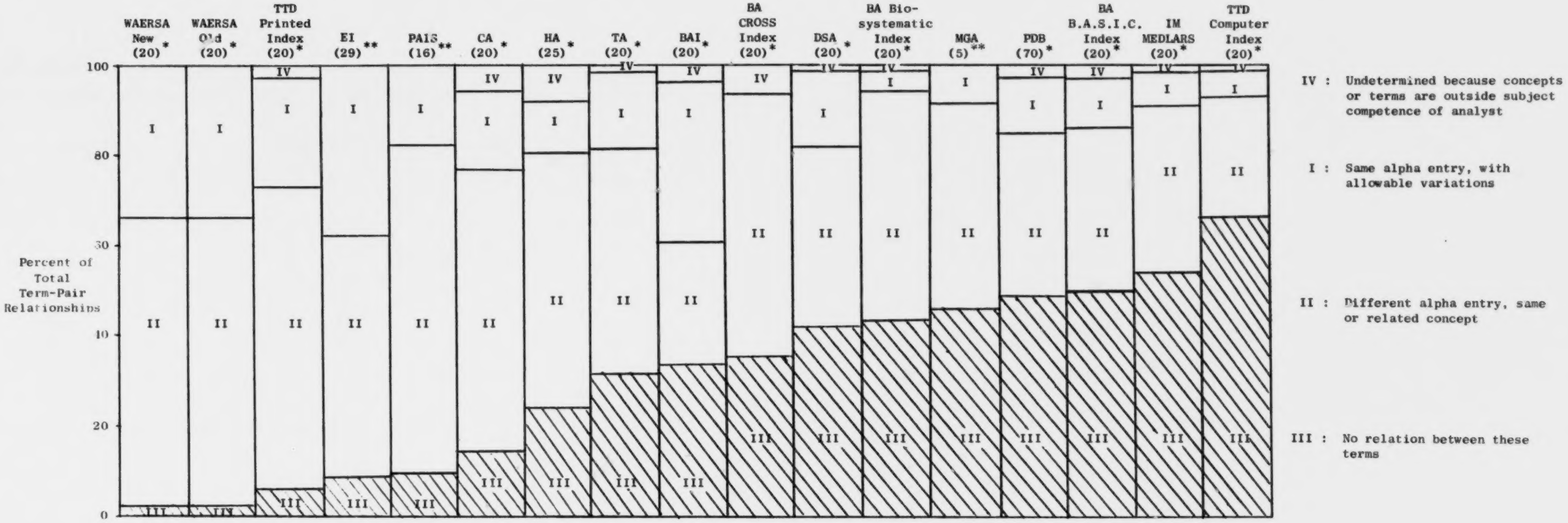
[*] The numbers in parentheses refer to the number of citations sampled from the file of jointly covered citations and used in this analysis.

[**] The numbers in parentheses refer to the total number of jointly covered citations available in the file and used for this analysis.

Table XII (concluded)

Index Term Relationships Observed in Citations Indexed Jointly by B of A and

Other Services That Use Hierarchical or Multiple Term Index Entries



Ranked by increasing percent of class III: no relation between terms

*The numbers in parentheses refer to the number of citations sampled from the file of jointly covered citations, and used for this analysis.

**The numbers in parentheses refer to the total number of jointly covered citations available in the file, and used for this analysis.

Fig. 12

Index Term Relationships Observed in Citations Indexed Jointly by B of A and 13 Other Services

3. Estimate of Measurement Error

As mentioned earlier, the comparison on an article-by-article basis of all possible combinations of index terms supplied by two services required a considerable amount of time. For that reason, the sample size for this analysis was kept relatively small, generally 20 citations if this number was available. However, in order to determine how sensitive the estimates of term relationship type percentages were to the sample size used, several estimates were made from increasingly larger sample sizes. PDB was the single-term service studied in this way. BAI, IM MEDLARS, and WAERSA were the multiple-term services studied in this way.

The estimates of percentage of types of term-pair relationships that were obtained with increasing sample sizes for single-term and multiple-term services are given in Tables XIII and XIV respectively. In general, this data indicates that an absolute variation of about ± 5 percent might be added to the percentage values determined earlier for each of the types of term-pair relationships, because of the smaller samples sizes actually used in this analysis.* This would not appear to significantly change the findings obtained with these samples, and reported in the previous section.

4. Unique Subject Access Points

A separate analysis was made of the index terms applied to the same sample of citations. In this analysis, each term was examined with respect to all of the terms supplied by the other service for that citation, instead of looking simply at pairs of terms. A judgment was then made as to whether a particular entry term was different in concept from all terms of the other service. A further distinction was made as to whether or not terms following the entry bore a relation to terms of the contrasted service. This analysis yielded a number representing the unique subject access points provided for a citation by B of A and a number representing the unique access points provided for the same citation by the other service. These numbers were totalled for B of A and for each other service. The totals were then combined to get a grand total of unique subject access points provided for that set of citations, together with percentages representing the contribution of B of A and of each of the other services to this grand total. These data are illustrated in Fig. 13 and given in detail in Table XV.

Of the services which, like B of A, provided multiple term indexing, CA provided the largest percent of unique subject access

---

* This would probably be a smaller figure, say ±2 percent, for the estimate of the percent of term-pair relationships that have the same alphabetic entry.

Type of Relationship	PDB (20)* Total No. of Occurrences	PDB (20)* % of Total	PDB (50) Total No. of Occurrences	PDB (50) % of Total	PDB (70) Total No. of Occurrences	PDB (70) % of Total	PDB (80)** Total No. of Occurrences	PDB (80)** % of Total	Absolute Percentage Difference Between PDB (20) and PDB (70)
I. Same alpha entry, with allowable variations	51	11.28	115	12.27	166	11.95	172	14.22	+ .67
a. Identical, with allowable variations	2		8		10		11		
b. B of A more specific	49		107		156		161		
II. Different alpha entry, same or related concept	191	42.26	327	34.90	518	37.29	485	40.08	- 4.97
a. Other term identical with term after B of A entry	56		115		171		140		
b. Other term synonymous with whole B of A term	1		1		2		5		
c. Other term synonymous with term after B of A entry	6		5		11		17		
d. Other term synonymous with B of A entry term	38		20		58		9		
e. Relationship not ascribable to other categories	49		89		138		207		
f. Other term more specific than B of A term	1		1		2		-		
g. Other term a subset of term after B of A entry	11		26		37		17		
h. Other term a subset of B of A entry term	11		30		41		30		
i. Whole B of A term more specific than other term	18		40		58		60		
III. No relation between these terms	194	42.92	480	51.23	674	48.53	529	43.72	+ 5.61
IV. Undetermined because concepts or terms are outside subject competence of analyst	16	3.54	15	1.60	31	2.23	24	1.98	- 1.22
	452	100.00	937	100.00	1,389	100.00	1,210	100.00	

*The numbers in parentheses refer to the number of citations sampled from the file of jointly covered citations and used in this analysis.

**Uniform samples of 20 and 50 citations were used for this study, then combined to make total file of 70. An independent sample of 80 citations was drawn largely from the first few B of A sections.

Table XIII

Effect of Sample Size on Determination of Value of Index Term Relationships Observed in Citations Indexed Jointly by B of A and Another Service (PDB) That Uses Single Term Index Entries

Type of Relationship	BAI (15)*			BAI (20)			Absolute Percentage Difference Between BAI (15) and BAI (20)
	Total No. of Occurrences		% of Total	Total No. of Occurrences		% of Total	
I. Same alpha entry, with allowable variations		15	38.46		20	35.71	- 2.75
1. Identical, with allowable variations	2			3			
2. B of A more general	1			1			
3. B of A more specific	10			13			
4. Terms after entry are synonymous	-			-			
5. Terms after entry are not synonymous	1			2			
6. Not ascribable to above categories	1			1			
II. Different alpha entry, same or related concept		11	28.21		15	26.79	- 1.42
1. Terms are inverted	1			1			
2. B of A more general	1			1			
3. B of A more specific	2			4			
4. Equal level of indexing, synonymous	1			1			
5. Equal level of indexing, not synonymous	4			4			
6. Not ascribable to above categories	2			4			
III. No relation between these terms		11	28.21		19	33.93	+ 5.72
IV. Undetermined because concepts or terms are outside subject competence of analyst		2	5.12		2	3.57	- 1.55
		39	100.00		56	100.00	

*The numbers in parentheses refer to the number of citations sampled from the file of jointly covered citations, and used in this analysis.

Table XIV

Effect of Sample Size on Determination of Value of Index Term Relationships Observed in Citations Indexed Jointly by B of A and Other Services That Use Hierarchical or Multiple Term Index Entries

Type of Relationship	IM MEDLARS (15) Total No. of Occurrences	IM MEDLARS (15) % of Total	IM MEDLARS (20) Total No. of Occurrences	IM MEDLARS (20) % of Total	Absolute Percentage Difference Between IM MEDLARS (15) and IM MEDLARS (20)
I. Same alpha entry, with allowable variations	18	7.53	22	6.51	- 1.02
1. Identical, with allowable variations	1		1		
2. B of A more general	2		2		
3. B of A more specific	9		10		
4. Terms after entry are synonymous	-		-		
5. Terms after entry are not synonymous	6		8		
6. Not ascribable to above categories	-		1		
II. Different alpha entry, same or related concept	97	40.58	127	37.57	- 3.01
1. Terms are inverted	-		-		
2. B of A more general	1		2		
3. B of A more specific	53		68		
4. Equal level of indexing, synonymous	-		-		
5. Equal level of indexing, not synonymous	21		34		
6. Not ascribable to above categories	22		23		
III. No relation between these terms	118	49.37	183	54.14	+ 4.77
IV. Undetermined because concepts or terms are outside subject competence of analyst	6	2.52	6	1.78	- .74
	239	100.00	338	100.00	

*The numbers in parentheses refer to the number of citations sampled from the file of jointly covered citations, and used in this analysis.

Table XIV (continued)

Effect of Sample Size on Determination of Value of Index Term Relationships Observed

in Citations Indexed Jointly by B of A and Other Services That Use Hierarchical or Multiple Term Index Entries

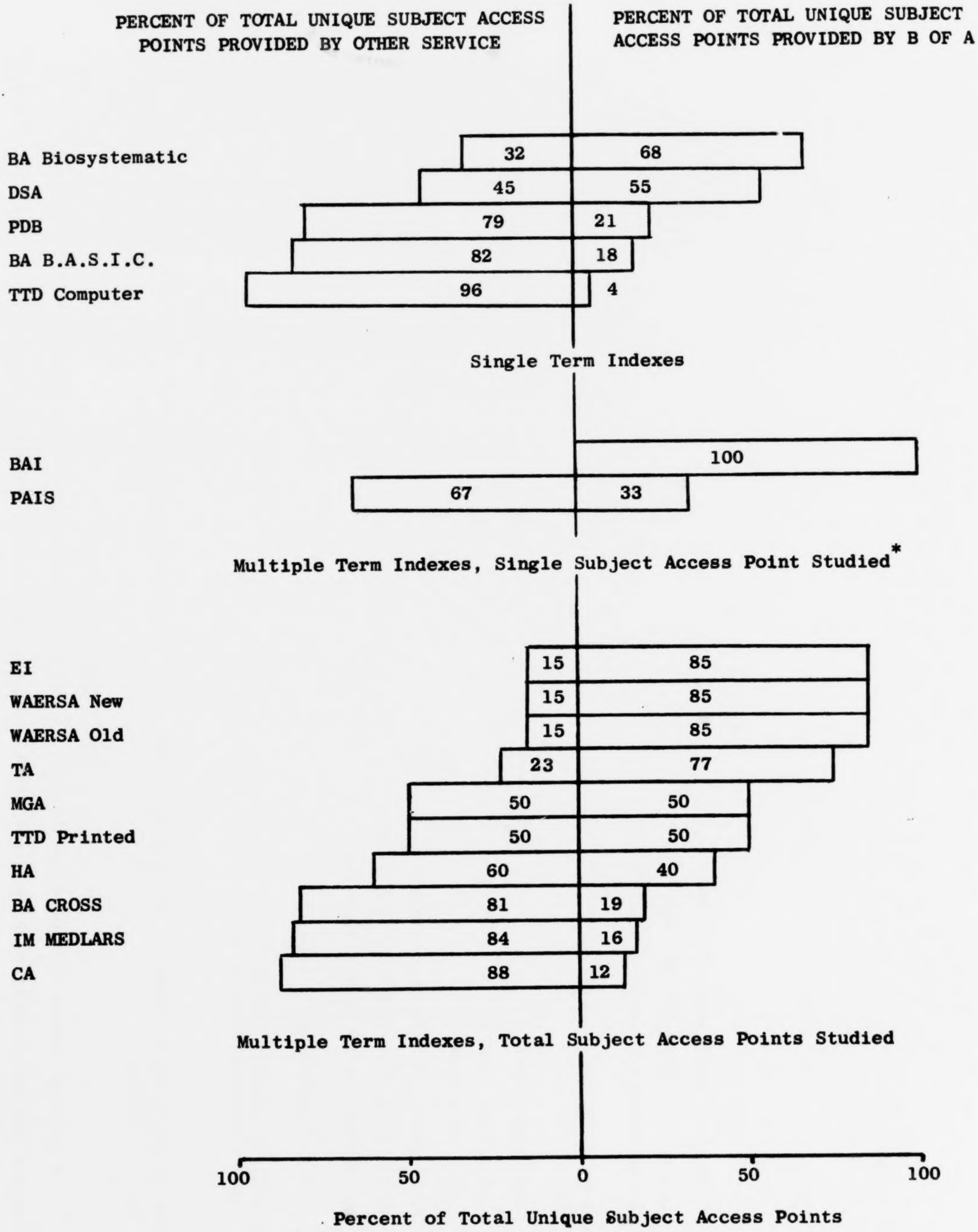
Type of Relationship	WAERSA-old (15) Total No. of Occurrences	WAERSA-old (15) % of Total	WAERSA-old (20) Total No. of Occurrences	WAERSA-old (20) % of Total	Absolute Percentage Difference Between WAERSA-old (15) and WAERSA-old (20)
I. Same alpha entry, with allowable variations	9	29.03	15	33.33	+ 4.30
1. Identical, with allowable variations	2		2		
2. B of A more general	2		2		
3. B of A more specific	2		2		
4. Terms after entry are synonymous	-		-		
5. Terms after entry are not synonymous	2		6		
6. Not ascribable to above categories	1		3		
II. Different alpha entry, same or related concept	21	67.74	29	64.45	- 3.29
1. Terms are inverted	-		-		
2. B of A more general	6		7		
3. B of A more specific	4		5		
4. Equal level of indexing, synonymous	-		-		
5. Equal level of indexing, not synonymous	6		6		
6. Not ascribable to above categories	5		11		
III. No relation between these terms	1	3.23	1	2.22	- 1.01
IV. Undetermined because concepts or terms are outside subject competence of analyst	-	-	-	-	-
	31	100.00	45	100.00	

*The numbers in parentheses refer to the number of citations sampled from the file of jointly covered citations, and used in this analysis.

Table XIV (concluded)

Effect of Sample Size on Determination of Value of Index Term Relationships Observed in

Citations Indexed Jointly by B of A and Other Services That Use Hierarchical or Multiple Term Index Entries



*Incomplete data since only one access point was studied for each of these services.

Fig. 13

Percent of Total Unique Subject Access Points Provided by B of A and 13 Other Services

Service	Number of Citations in Sample Indexed by Both B of A and Other Service	Terms Assigned by B of A to these Citations				Terms Assigned by the Other Service to these Citations				Total Number of Unique Subject Access Points Provided by B of A and the Other Service	Percent of Total Unique Subject Access Points that are Provided by:	
		Total Number	Number of Whole Terms that are Unique Subjects[1]	Number of Terms with Entries that are Unique Subjects[3]	Total Unique Terms and Entries Provided by B of A	Total Number	Number of Whole Terms that are Unique Subjects	Number of Terms with Entries that are Unique Subjects	Total Unique Terms and Entries Provided by Other Service		B of A	Other Service
BA B.A.S.I.C.	20	65	4 (6.1)[2]	5 (7.7)	9 (13.8)	146	40 (27.4)	dna	40 (27.4)	49	18.4	81.6
Biosystematic	20	65	7 (10.8)	19 (29.2)	26 (40.0)	34	12 (35.2)	dna	12 (35.2)	38	68.4	31.6
CROSS	20	65	4 (6.2)	9 (13.8)	13 (20.0)	117	30 (25.6)	27 (23.1)	57 (48.7)	70	18.6	81.4
BAI	20	56	19 (33.9)	9 (16.1)	28 (50.0)	20[4]	—	—	—	28	100.0	—
CA	20	54	—	4 (7.4)	4 (7.4)	86	6 (7.0)	24 (27.9)	30 (34.9)	34	11.8	88.2
DSA	20	53	7 (13.2)	10 (18.9)	17 (32.1)	65	14 (21.5)	dna	14 (21.5)	31	54.8	45.2
EI	29	59	5 (8.5)	12 (20.3)	17 (28.8)	29	3 (10.3)	—	3 (10.3)	20	85.0	15.0
FA		Index terms unavailable for this study										
HA	25	78	1 (1.3)	5 (6.4)	6 (7.7)	109	4 (3.7)	5 (2.6)	9 (6.3)	15	40.0	60.0
IM MEDLARS	20	56	2 (3.6)	6 (10.7)	8 (14.3)	124	39 (31.5)	2 (1.6)	41 (33.1)	49	16.3	83.7
IV		Index terms unavailable for this study										
MGA	5	14	4 (28.6)	1 (7.1)	5 (35.7)	13	4 (30.8)	1 (7.7)	5 (38.5)	10	50.0	50.0
PDB	70	218	—	26 (11.9)	26 (11.9)	345	97 (28.1)	dna	97 (28.1)	123	21.1	78.9
PAIS	16	23	2 (8.7)	—	2 (8.7)	16[4]	—	4 (25.0)	4 (25.0)	6	33.3	66.7
TTD Printed	20	47	2 (4.3)	8 (17.0)	10 (21.3)	38	—	10 (26.3)	10 (26.3)	20	50.0	50.0
Computer	20	47	1 (2.1)	4 (8.5)	5 (10.6)	198	121 (61.1)	dna	121 (61.1)	126	4.0	96.0
TA	20	77	6 (7.8)	11 (14.2)	17 (22.0)	52	3 (5.8)	2 (3.8)	5 (9.6)	22	77.3	22.7
WAERSA New	20	45	1 (2.2)	16 (35.5)	17 (37.7)	20	—	3 (1.5)	3 (1.5)	20	85.0	15.0
WAERSA Old	20	45	1 (2.2)	16 (35.5)	17 (37.7)	20	—	3 (1.5)	3 (1.5)	20	85.0	15.0

1. On an article-by-article basis, this is the total number of index terms provided by B of A in this sample that had no equivalent term from the other service.
2. The numbers in parentheses are the percentages of the total number of index terms assigned by these services.
3. Situations in which the entry word contributes a unique subject, but terms following the entry word are related to subjects contained in the index terms of the contrasted service.
4. Only one index term picked up, although citation may have appeared under more than one.

Table XV

Unique Subject Index Access Points Contributed by B of A and the Other Services points (88.2 percent). Of these a large number were chemical compounds. Three services of this type provided a smaller percentage of unique terms than B of A: EI (15 percent), WAERSA (15 percent) and TA (22.7 percent). Five other services covered a range from 84 percent to 50 percent. Two services, BAI and PAIS, also provided multiple term indexing, but should be considered separately, since only the one entry under which a searcher found the citation was available.

Of the services which use single term entries, the largest percent of unique access points was provided by the TTD Computer Index (96 percent), and the least by BA Biosystematic (31.6 percent). The three others (BA, B.A.S.I.C., PDB, and DSA) varied from 82 percent to 45 percent.

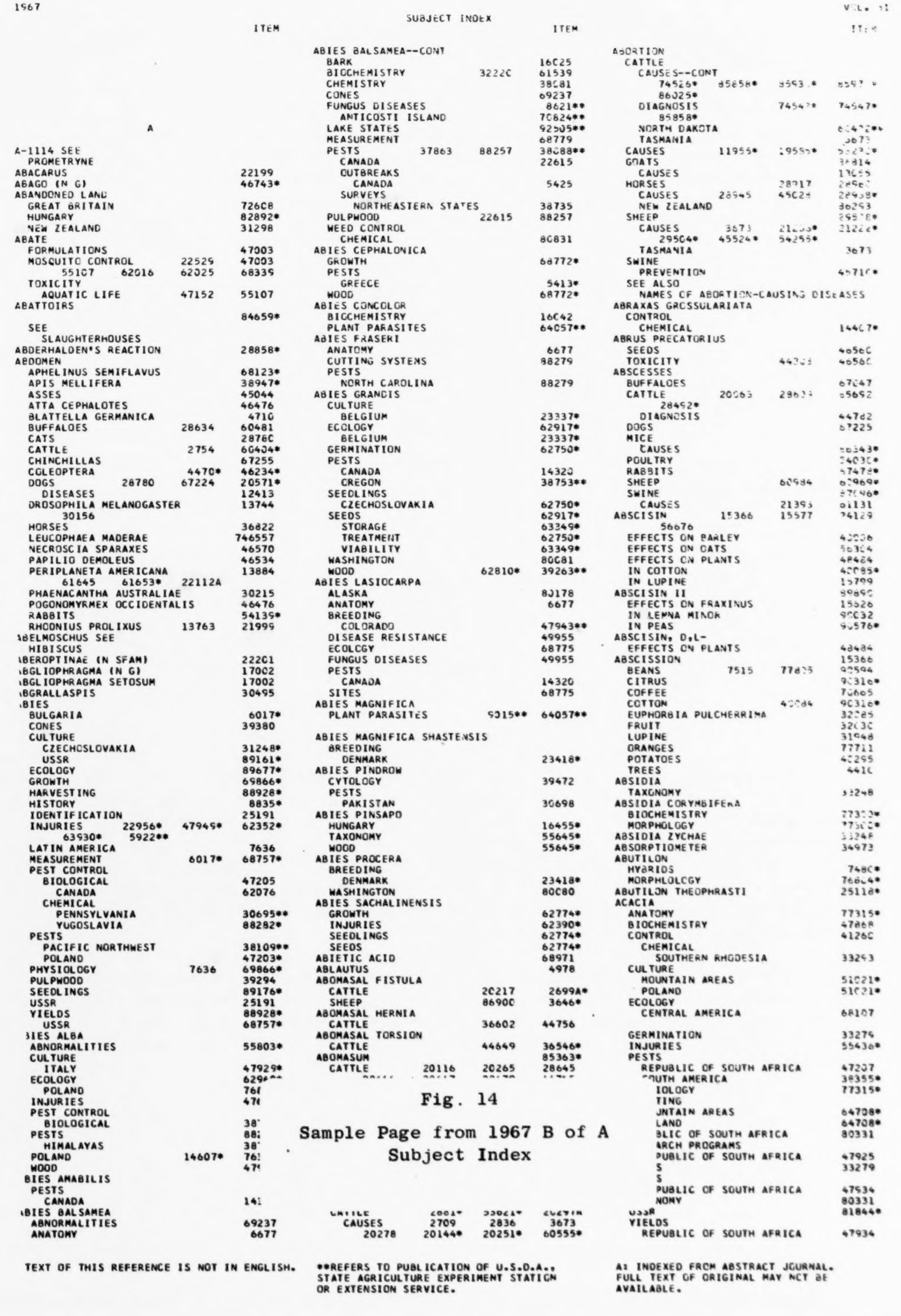
IV. RELATIONSHIP OF B OF A SUBJECT LIST TO TERMS APPLIED BY OTHER SERVICES

In addition to comparing the index terms that were actually applied jointly to individual documents by B of A and other services, a study was also made of the extent to which all of the terms used by the other services on the jointly covered documents were also included in the B of A list of subject headings, as represented by the B of A 1967 annual subject index (see sample page in Fig. 14). The objective of this effort was to obtain another, and independent, measure of the degree of association between the indexing of B of A and other services. This measure represents the degree of potential match, and is less sensitive to the frequency of use of a term by each of the services. The working data for this part of the study consisted of an alphabetically arranged computer listing of the index terms used by each of the other services for indexing the sample documents covered by B of A. A sample page from such a computer listing was shown in Fig. 6.

As with the study of comparative indexing that was done on a citation-by-citation basis, a number of types of relationships could be defined for the match between the other services' terms and the terms in the B of A authority list. However, because of the large number of possible matches in the authority list, it would have been too difficult to apply exactly the same set of relationships. For this reason, this analysis effort was restricted to determining only the number of Class I relationships described earlier (i.e., same alphabetic entry, with allowable variations) that existed between the terms assigned by the other services and the terms on the B of A list.

This analysis was done by checking to see whether each of the other service's terms had a Class I relationship to a term in the B of A annual index. If it had such a relationship, then a note was made to indicate: (1) whether the whole term, as used by the other service, appeared in B of A; or (2) whether just the entry word was alphabetically the same in both B of A and the other service; or (3) whether B of A had only a see reference under that entry term. The variations allowed in assigning alphabetic identity were the same as those used in comparing index terms assigned by two services to the same document (see Table X)

Data for this comparison are illustrated in Fig. 15 and summarized in Table XVI, and show that a large percentage (48 to 93 percent) of the index terms actually used by the other services on the sample B of A citations are already included in the B of A subject authority list.



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ITEM

A

- A-1114 SEE
  - PROMETRYNE
- ABACARUS 22199
- ABAGO (N G) 46743*
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  - HUNGARY 82892*
  - NEW ZEALAND 31298
- ABATE
  - FORMULATIONS 47003
  - MOSQUITO CONTROL 22529 47003 55107 62016 62025 68339
  - TOXICITY
    - AQUATIC LIFE 47152 55107
- ABATTOIRS 84659*
  - SEE
    - SLAUGHTERHOUSES
- ABDERHALDEN'S REACTION 28858*
- ABDOMEN
  - APHELINUS SEMIFLAVUS 68123*
  - APIS MELLIFERA 38947*
  - ASSES 45044
  - ATTA CEPHALOTES 46476
  - BLATTELLA GERMANICA 4710
  - BUFFALOES 28634 60481
  - CATS 28760
  - CATTLE 2754 60404*
  - CHINCHILLAS 67255
  - COLEOPTERA 4470* 46234*
  - DOGS 28780 67224 20571*
    - DISEASES 12413
  - DROSOPHILA MELANOGASTER 13744 30156
  - HORSES 36822
  - LEUCOPHAEA MADERAE 746557
  - NECROSCIA SPARAXES 46570
  - PAPILIO DEMOLEUS 46534
  - PERIPLANETA AMERICANA 13884 61645 61653* 22112A
  - PHAENACANTHA AUSTRALIAE 30215
  - POGONOMYRMEX OCCIDENTALIS 46476
  - RABBITS 54139*
  - RHODNIUS PROLIXUS 13763 21999
- ABELMOSCHUS SEE
  - HIBISCUS
- ABEROPTINAE (N SFAM) 22201
- ABGLIOPHRAGMA (N G) 17002
- ABGLIOPHRAGMA SETOSUM 17002
- ABGRALLASPIS 30495
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  - BULGARIA 6017*
  - CONES 39380
  - CULTURE
    - CZECHOSLOVAKIA 31248*
    - USSR 89161*
  - ECOLOGY 89677*
  - GROWTH 69866*
  - HARVESTING 88928*
  - HISTORY 8835*
  - IDENTIFICATION 25191
  - INJURIES 22956* 47949* 62352* 63930* 5922**
  - LATIN AMERICA 7636
  - MEASUREMENT 6017* 68757*
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    - CHEMICAL
      - PENNSYLVANIA 30695**
      - YUGOSLAVIA 88282*
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    - POLAND 47203*
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  - PULPWOOD 39294
  - SEEDLINGS 89176*
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- ABIES BALSAMEA
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  - ANATOMY 6677
- ABIES BALSAMEA--CONT
  - BARK 16025
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  - FUNGUS DISEASES 8621**
    - ANTICOSTI ISLAND 70824**
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    - CANADA 22615
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  - PULPWOOD 22615 88257
  - WEED CONTROL
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- ABIES CEPHALONICA
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  - PESTS
    - GREECE 5413*
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  - PLANT PARASITES 64057**
- ABIES FRASERI
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  - GERMINATION 62750*
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    - OREGON 38753**
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    - CZECHOSLOVAKIA 62750*
  - SEEDS 62917*
    - STORAGE 63349*
    - TREATMENT 62750*
    - VIABILITY 63349*
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  - WOOD 62810* 39263**
- ABIES LASIOCARPA
  - ALASKA 80178
  - ANATOMY 6677
  - BREEDING
    - COLORADO 47943**
  - DISEASE RESISTANCE 49955
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  - FUNGUS DISEASES 49955
  - PESTS
    - CANADA 14320
  - SITES 68775
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  - PLANT PARASITES 9015** 64057**
- ABIES MAGNIFICA SHASTENSIS
  - BREEDING
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    - DENMARK 23418*
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  - INJURIES 62390*
  - SEEDLINGS 62774*
  - SEEDS 62774*
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- ABOMASAL FISTULA
  - CATTLE 20217 2699A*
  - SHEEP 86900 3646*
- ABOMASAL HERNIA
  - CATTLE 36602 44756
- ABOMASAL TORSION
  - CATTLE 44649 36546*
- ABOMASUM 85363*
  - CATTLE 20116 20265 28645
  - CATTLE
    - CAUSES 2709 2836 3673 20278 20144* 20251* 60555*
- ABORTION
  - CATTLE
    - CAUSES--CONT 74526* 85858* 85931* 85937* 86025*
    - DIAGNOSIS 74542* 74547* 85858*
    - NORTH DAKOTA 60472**
    - TASMANIA 3673
  - CAUSES 11955* 19595* 53230*
  - GOATS 36814
    - CAUSES 13655
  - HORSES 28917 28960
    - CAUSES 28945 45028 28959*
    - NEW ZEALAND 36293
  - SHEEP 29578*
    - CAUSES 3673 21233* 21222* 29504* 45524* 54255*
    - TASMANIA 3673
  - SWINE
    - PREVENTION 45710*
  - SEE ALSO
    - NAMES OF ABORTION-CAUSING DISEASES
- ABRAXAS GROSSULARIATA
  - CONTROL
    - CHEMICAL 14407*
- ABRUS PRECATORIUS
  - SEEDS 46560
  - TOXICITY 44303 46560
- ABSCESSES
  - BUFFALOES 67047
  - CATTLE 20563 28634 65692 28492*
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  - DOGS 67225
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  - POULTRY 34035*
  - RABBITS 57478*
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  - SWINE 37096*
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  - EFFECTS ON BARLEY 40036
  - EFFECTS ON OATS 56324
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  - IN LUPINE 15799
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  - EFFECTS ON PLANTS 48484
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  - BEANS 7515 77825 90594
  - CITRUS 90316*
  - COFFEE 70605
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  - FRUIT 32030
  - LUPINE 31948
  - ORANGES 77711
  - POTATOES 40295
  - TREES 4410
- ABSIDIA
  - TAXONOMY 33248
- ABSIDIA CORYMBIFERA
  - BIOCHEMISTRY 77300*
  - MORPHOLOGY 77300*
- ABSIDIA ZYCHAE 33248
- ABSORPTIOMETER 34973
- ABUTILON
  - HYBRIDS 7480*
  - MORPHLOLCGY 76864*
- ABUTILON THEOPHRASTI 25118*
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  - ANATOMY 77315*
  - BIOCHEMISTRY 47868
  - CONTROL 41260
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    - POLAND 51021*
  - ECOLOGY
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  - GERMINATION 33279
  - INJURIES 55436*
  - PESTS
    - REPUBLIC OF SOUTH AFRICA 47207
    - SOUTH AMERICA 38355*
      - IOLOGY 77315*
      - TING
      - JNTAIN AREAS 64708*
      - LAND 64708*
      - BLIC OF SOUTH AFRICA 80331
      - ARCH PROGRAMS
      - PUBLIC OF SOUTH AFRICA 47925
      - S 33279
      - S
      - PUBLIC OF SOUTH AFRICA 47934
      - NOMY 80331
  - USSR 81844*
  - YIELDS
    - REPUBLIC OF SOUTH AFRICA 47934

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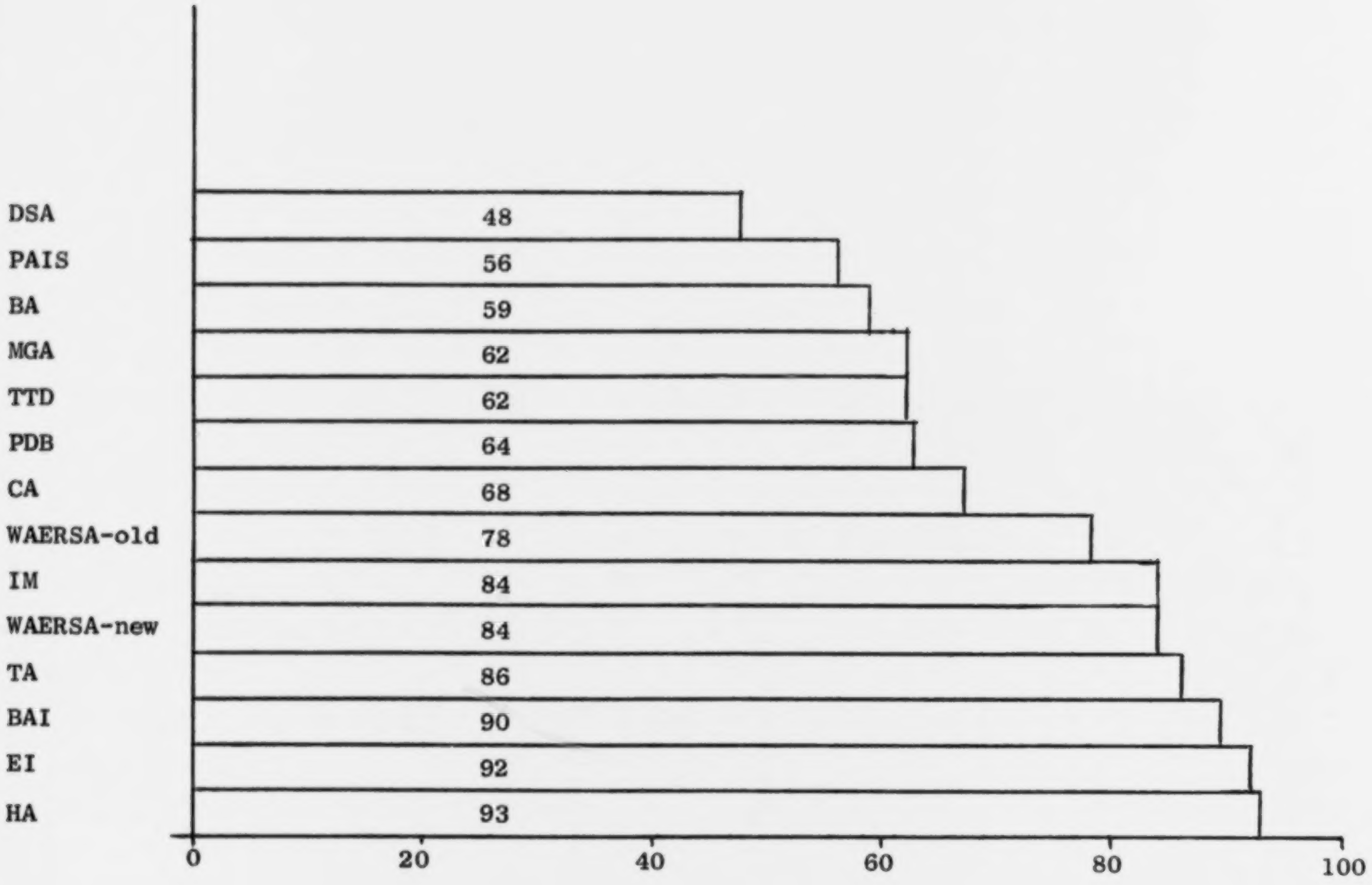
Fig. 14

Sample Page from 1967 B of A Subject Index



Percent of Total Number of Different Terms Supplied
by This Service That Had the Same Alphabetic
Entry Term as Those in the B of A Subject List

Fig. 15

Percent of Other Services' Index Terms in B of A Subject Index

			Number of Terms				
Service	Number of Citations Indexed Jointly With B of A	Total Number of Different Terms Supplied by This Service for the Citations in This Sample	Alphabetically Identical to Terms in B of A Subject List	With Same Entry Word Only as a Term Used by B of A*	With Same Entry as a See Reference Used by B of A*	Total With Same Alphabetic Entry	Percent of Total Number of Different Terms Supplied by This Service That Were the Same Alphabetic Entry as Those in the B of A Subject List
BA**	752						
B.A.S.I.C.		4,140	1,898	197	304	2,399	57.9
Biosystematic		437	203	84	8	295	67.5
Total		4,577	2,101	281	312	2,694	58.9
BAI	378	378	160	139	40	339	89.7
CA	591	3,188	191	1,842	119	2,152	67.5
DSA	72	216	87	14	2	103	47.7
EI	29	26	8	14	2	24	92.3
FA	Index terms unavailable for this study						
HA	138	521	70	358	55	483	92.7
IM	306						
IM		768	179	410	65	654	85.2
MEDLARS (terms added to IM terms)		499	139	226	44	409	82.0
Total		1,267	318	636	109	1,063	83.9
IV	Index terms unavailable for this study						
MGA	5	13	1	5	2	8	61.5
PDB	897	3,336	1,655	197	262	2,114	63.6
PAIS	16	16	2	5	2	9	56.3
TTD	33						
Printed		53	0	36	2	38	71.7
Computer		191	63	50	1	114	59.7
Total		244	63	86	3	152	62.3
TA	27	66	6	43	8	57	86.4
WAERSA Old	79	83	9	49	7	65	78.2
WAERSA New	79	83	9	54	7	70	84.3

* With allowable variations of the type listed in Table X

** The CROSS Index of Biological Abstracts was not examined by this procedure because the terms supplied by BA were abbreviated and a complete list of the abbreviations used was not available

Table XVI

Relationships Observed in a Comparison of the 1967 B of A Subject Index with the Index Terms Supplied by the Other Services

In contrast to the findings described in earlier sections, i.e., that a relatively small percent of terms assigned to the same citations by B of A and one other service had the same alphabetical entry with allowable variations, this analysis revealed a much higher percentage of terms with the same alphabetical entry. This indicates that there is a high degree of overlap in the vocabulary used by B of A and other services, even though the choice of terms for a given citation may differ considerably.

It should be noted that this count was based on alphabetical relationships rather than subject relationships or application of a term to a particular article. The same word or term might be common to both B of A and another service but have an entirely different meaning in each index. For example, the terms "slashers" and "slashing" used by TTD were judged to have a Class I relationship with the term "slash" as used by B of A. However, B of A's use of "slash" was as a forestry term, and the articles indexed by B of A under this term had no relation to "slash" used by TTD to index textile processing. This factor would work to discount somewhat the degree of actual commonality of the word lists.

V. RELATIONSHIP OF B OF A TERMS TO TITLE WORDS

Several prior studies have investigated the extent to which terms taken from the document title are related to terms that were or would have been supplied by manual indexing, with or without an indexing authority list.* Several of the services participating in this study (PDB, BA) made extensive use of title word indexing. It was of interest to this study to determine the relationship of present B of A indexing to possible title word indexing.

A. PROCEDURE

It was assumed that title words were incorporated or reflected to some extent in the B of A indexing. In order to determine the extent of this inclusion, two uniform random samples of one hundred citations each were taken from a computer listing, in citation number order, of all index terms applied by NAL to the citations appearing in the 1967 B of A (see Fig. 16). The first sample of 100 consisted of every 1000th citation from this serial numbered list, beginning with citation number 1000, plus every 15,000th citation, beginning with citation number 15,001. The second sample of 100 consisted of every 1000th citation beginning with citation number 500, plus every 15,000th citation beginning with citation number 15,501.

The number of unique words in the set of B of A index terms for each citation and the number of these B of A index terms which also appeared in the title of each citation were counted. These results are summarized in Table XVII, broken into sample groups of fifty in order to show the consistency of results with increasing sample size.

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* J. O'Connor, "Correlation of Indexing Headings and Title Words in Three Medical Indexing Systems." American Documentation, v. 15, no. 2, April 1964, p. 96.

J. P. Knable II, "An Experiment Comparing Keywords Found in Indexes and Abstracts Prepared by Humans with Those in Titles." American Documentation, v. 16, no. 2, April 1965, pp. 123-124.

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                              LISTING OF SUBJECT INDEX
                                        1967

 UNIQUE    CITATION  LANG  GEOG
 NUMBER     NUMBER   CODE  CODE                   S U B J E C T   I N D E X

67600095   000001     0     3    ECONOMY   POLICIES   THAILAND
67600096   000002     1     2    ECONOMIC CONDITIONS   NICARAGUA
67600097   000003     1     0    ECONOMIC CONDITIONS
67600098   000003     1     2    ECONOMIC CONDITIONS   GUATEMALA
67600099   000004     0     2    ECONOMIC CONDITICNS   ISRAEL
67600100   000005     1     2    ECONOMIC CONDITIUNS   SPAIN
67600101   000005     1     2    TRADE   SPAIN
67600102   000006     0     3    INDUSTRY   AND AGRICULTURE   GREAT BRITAIN
67600103   000007     0     0    ECONOMIC GROWTH
67600104   000007     0     0    BIBLIOGRAPHIES   ECONOMIC GROWTH
67600106   000007     0     0    BIBLIOGRAPHIES   ECONOMIC HISTORY
67600107   000008     1     2    ECONOMIC GROWTH   ITALY
67600108   000009     0     2    ECONOMY   LATIN AMERICA
67600109   000009     0     2    TRADE   LATIN AMERICA
67600110   000009     0     2    GECGRAPHY   LATIN AMERICA
67600111   000010     1     3    ECONCMY   PCLICIES   HONDURAS
67600112   000010     1     2    SCCIAL CONDITIONS   HONDURAS
67600113   000011     0     0    ECONOMICS   RESEARCH METHODS   STATISTICAL
67600114   000012     1     2    ECONOMIC CONDITIONS   RUMANIA
67600115   000012     1     2    SOCIAL CONDITIONS   RUMANIA
67600116   000012     1     2    PCLITICS   RUMANIA
67600117   000013     2     0    ECONOMICS   BIBLIOGRAPHIES
67600118   000013     2     0    BIBLIOGRAPHIES   ECCNOMICS
67600119   000014     1     2    ECONOMY   USSR
67600120   000015     0     0    ECONOMIC GROWTH
67600121   000016     0     2    AGRIBUSINESS   DEVELOPING AREAS
67600122   000017     1     0    ECONOMICS   RESEARCH METHODS   STATISTICAL
67600123   000017     1     0    ACCOUNTING
67600124   000017     1     0    BIBLICGRAPHIES   ACCOUNTING
67600125   000017     1     0    BIBLICGRAPHIES   ECONOMIC RESEARCH METHODS
67600126   000018     0     0    ECONOMY   PCLICIES
67600127   000019     1     2    ECONOMIC CONDITICNS   AFRICA
67600128   000019     1     2    SOCIAL CONDITIONS   ASIA
67600129   000019     1     2    ECONOMIC CONDITIONS   ASIA
67600130   000019     1     2    SCCIAL CONDITICNS   AFRICA
67600131   000019     1     3    LAND   REFORM   ASIA
67600132   000019     1     3    LAND   REFORM   AFRICA
67600133   000020     0     2    ECONOMIC CONDITIONS   ISRAEL
67600134   000021     0     2    ECONOMIC CONDITIONS   JAMAICA
67600135   000022     1     2    PCLICIES   SWITZERLAND
67600136   000022     1     2    ECONOMY   SWITZERLAND
67600137   000023     1     2    ECONOMIC GROWTH   GREECE
67600138   000024     1     0    ECONOMICS   RESEARCH METHODS   STATISTICAL
67600139   000025     1     2    INDUSTRIALIZATION   FRANCE
67600140   000026     2     0    SPATIAL RESEARCH   BIBLIOGRAPHIES
67600141   000026     2     0    BIBLICGRAPHIES   SPATIAL RESEARCH
67600142   000026     2     0    ECONOMICS   RESEARCH METHODS   STATISTICAL
67600143   000026     2     0    BIBLICGRAPHIES   ECONOMIC RESEARCH METHODS

                                        1
```

Fig. 16

Sample Page of B of A Index
Terms Furnished by NAL
in Citation Number Sequence

Number of Citations		Total Number of Unique Words in B of A Index Terms Applied to This Sample		Total Number of These Index Words Which Also Appear in Citation Titles in This Sample		Percent of B of A Index Words Applied to This Sample Which Also Appear in Citation Titles in This Sample	
Sample	Cumulative	Sample	Cumulative	Sample	Cumulative	Sample	Cumulative
50		224		99		44.2	
	50		224		99		44.2
50		238		100		42.0	
	100		462		199		43.1
50		279		117		41.9	
	150		741		316		42.6
50		228		94		41.2	
	200		969		410		42.3

Table XVII

Relationship of B of A Index Words to Citation Titles on an Article-by-Article Basis

B. FINDINGS

The results given in Table XVII indicate that on the average 42 percent of the index term words applied by B of A to a citation also appeared in the titles of the documents being indexed. This suggests that: (1) the titles are descriptive of the subject content of the documents, and (2) the indexing was influenced by title words.

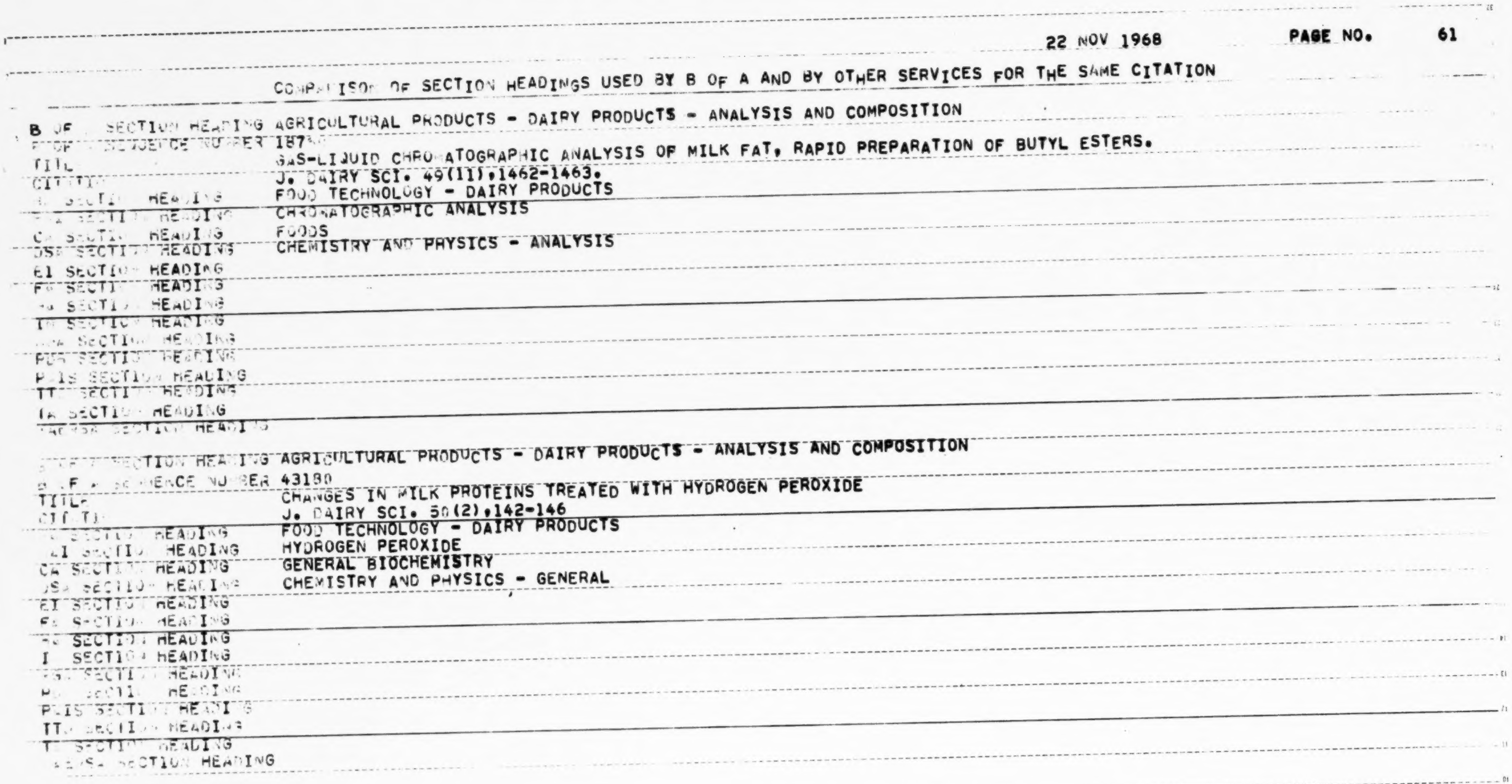
VI. RELATIONSHIP OF B OF A SECTION HEADINGS TO THOSE USED BY OTHER SERVICES

The primary section headings used by B of A, though printed in alphabetical order, are similar to a classification system. They are general subject categories which cover the whole field of agriculture, regardless of the number of articles which fall within any one category. In B of A an article is listed once, under a general heading, and references are made to it from the applicable specific index terms in the subject index. Although the primary headings are subdivided, they are never very specific. Throughout B of A no heading is more specific than a type of crop or genus of animal or insect.

The rationale for general headings is that the reader approaching via the subject headings is interested in a general approach to a general subject. Grouping articles under the general headings should allow the reader to use B of A as a current awareness tool as well as a reference work. To find very specific information, he would use the index.

It would be useful to the user if, after scanning though the B of A sections, he could also scan the other abstracting and indexing services in a similar manner in order to add to the completeness of coverage of a general subject, preferably by looking under the same subject heading as that used in B of A. Unfortunately, a look at the section headings used by other services for the same B of A citation shows that the reader generally cannot do this. The subject headings used by the 15 other services studied here are generally unlike those used by B of A or by each other. This observation is based upon an examination of the printed section headings used by those services for the B of A citations that they covered. This observation was facilitated by a summary printout of section headings for the overlapped citations, as shown in Fig. 17.

The differences in the headings are not due solely to the simple substitution of synonyms, but rather to differing degrees of specificity in indexing and the different points of view of the indexes. Furthermore, each of the services is different enough so that learning the vocabulary of one does not help much in predicting what to look under in another. The following citation should serve as an introductory example:



```
                                                                         22 NOV 1968        PAGE NO.      61
                         COMPARISON OF SECTION HEADINGS USED BY B OF A AND BY OTHER SERVICES FOR THE SAME CITATION
B OF A SECTION HEADING  AGRICULTURAL PRODUCTS - DAIRY PRODUCTS - ANALYSIS AND COMPOSITION
B OF A SEQUENCE NUMBER  187[illegible]
TITLE                   GAS-LIQUID CHROMATOGRAPHIC ANALYSIS OF MILK FAT, RAPID PREPARATION OF BUTYL ESTERS.
CITATION                J. DAIRY SCI. 49(11),1462-1463.
[illegible] SECTION HEADING      FOOD TECHNOLOGY - DAIRY PRODUCTS
[illegible] SECTION HEADING     CHROMATOGRAPHIC ANALYSIS
CA SECTION HEADING      FOODS
DSP SECTION HEADING     CHEMISTRY AND PHYSICS - ANALYSIS
EI SECTION HEADING
F[illegible] SECTION HEADING
[illegible] SECTION HEADING
IM SECTION HEADING
[illegible] SECTION HEADING
PUR SECTION HEADING
PAIS SECTION HEADING
TT SECTION HEADING
IA SECTION HEADING
[illegible] SECTION HEADING

B OF A SECTION HEADING  AGRICULTURAL PRODUCTS - DAIRY PRODUCTS - ANALYSIS AND COMPOSITION
B OF A SEQUENCE NUMBER  43180
TITLE                   CHANGES IN MILK PROTEINS TREATED WITH HYDROGEN PEROXIDE
CITATION                J. DAIRY SCI. 50(2),142-146
[illegible] SECTION HEADING      FOOD TECHNOLOGY - DAIRY PRODUCTS
[illegible]I SECTION HEADING     HYDROGEN PEROXIDE
CA SECTION HEADING      GENERAL BIOCHEMISTRY
[illegible]SA SECTION HEADING    CHEMISTRY AND PHYSICS - GENERAL
EI SECTION HEADING
F[illegible] SECTION HEADING
[illegible] SECTION HEADING
I  SECTION HEADING
[illegible] SECTION HEADING
P[illegible] SECTION HEADING
PAIS SECTION HEADING
TT[illegible] SECTION HEADING
T[illegible] SECTION HEADING
[illegible] SECTION HEADING
```

Fig. 17

Sample Page of Summary
Printout of Printed Section
Headings Used by Other Services
for B of A Citations

PRINTED IN U.S.A.
1411-3 UARCO BUSINESS FORMS - OAKLAND, CALIF.

B of A Citation Number:	86820
Title:	Hormonal control of reproduction in lactating and non-lactating anestrous ewes.
B of A heading:	Animal industry - sheep and goats - breeds and breeding
BA heading:	Pharmacology - general - reproductive system
BAI heading:	Lactation
CA heading:	Hormones
DSA heading:	Physiology - general

As a first set of specific and illustrative examples, Table XVIII lists the section headings used by three other services (BA, CA, DSA) for eight citations from the B of A section heading: Agricultural Products - Dairy Products - Analysis and Composition. DSA, which is specifically concerned with this field, put the same eight citations under six different headings. CA and BA employ broad headings in the same manner as B of A, but CA used four different headings for seven of these citations, and BA used three different headings for six of these citations.

A second set of examples is given in Table XIX, in which seven citations from various B of A sections on veterinary medicine are given with the corresponding section headings from four other services (BA, BAI, CA, DSA). A third set of examples is given by the three unrelated citations in Table XX. It should be noted that BAI probably included most of these citations under other section headings in addition to those shown in Tables XVIII-XX; however, only one heading was picked up in this study.

With all of the services examined, one point was clear: almost the entire contents of any of the other services would have to be scanned in order to find a significant fraction of the subject coverage of any group of citations under a given B of A section heading.

B of A Citation Number and Title	BA Section Heading	CA Section Heading	DSA Section Heading
1200: Acetaldehyde utilization by Leuconostoc species	Food and industrial microbiology - miscellaneous	Microbial biochemistry	Bacteriology and mycology - general
11040: Distribution of lipase among components of a water extract of rennet casein		Foods	Chemistry and physics - general
18720: A comparison between hot-wire laboratory apparatus and a plate heat exchanger for determing the sensitivity of milk to deposit formation	Food technology - dairy products		Chemistry and physics - processing and manufacture
18740: Calcium, protein, fat and moisture of commercially made cottage cheese	Food technology - dairy products	Foods	Chemistry and physics - milk and milk products
18760: Gas-liquid chromatographic analysis of milk fat, rapid preparation of butyl esters	Food technology - dairy products	Foods	Chemistry and physics - analysis
43180: Changes in milk proteins treated with hydrogen peroxide	Food technology - dairy products	General biochemistry	Chemistry and physics - general
65800: The isolation and identification of the B protein of lactose synthetase as alpha-lactalbumin	Enzymes - chemical and physical studies	Enzymes	Chemistry and physics - general
83783: Increasing protein content of whey		Foods	Technology - various products

Note: The B of A section heading for all eight citations was: Agricultural Products - dairy products - analysis and composition

Table XVIII

Section Headings Used by B of A and Three Other Services for the Same Citations in the Field of Agricultural Products

B of A Citation Number and Title	B of A Section Heading	BA Section Heading	BAI Section Heading	CA Section Heading	DSA Section Heading
28040: Studies on foot and mouth disease virus ribonucleic acid synthesis	Animal industry - veterinary medicine	Virology, general - animal host viruses	Foot and mouth disease	Mammalian pathological biochemistry	
44240: Separation of infections and autointerfering particles in vesicular stomatitis virus preparations	Animal industry - veterinary medicine	Medical microbiology - pathogenic viruses	Stomatitis, vesicular, virus	Microbial biochemistry	
2800: Histochemical observations on Mycoplasma after staining with acridine orange	Animal industry - cattle - veterinary medicine	Clinical microbiological methods - general	Mycoplasma	Microbial biochemistry	
28540: Studies of bovine mastitis; histochemical observations on the streak-canal epithelium	Animal industry - cattle - veterinary medicine	Veterinary science - microbiology	Cows - diseases and pests		Bacteriology and mycology - animal diseases
36600: Correlation between California mastitis and Wisconsin mastitis test reagents as used in the Wisconsin mastitis test	Animal industry - cattle - veterinary medicine	Veterinary science - microbiology	Mastitis tests		Bacteriology and mycology - analysis
44680: Anthelmitic activity of two organic phosphorous compounds, coumaphos and naphthalophos, against gastrointestinal nematodes of cattle	Animal industry - cattle - veterinary medicine	Chemotheraphy - antiparasitic agents	Coumaphos	Pesticides	
37200: Microspectrophotometry of deoxyribonucleic acid in Shope papilloma and derived carcinoma	Animal industry - rabbits - veterinary medicine	Neoplasms - general; methods	Papilloma virus	Mammalian pathological biochemistry	

Table XIX

Section Headings Used by B of A and Four Other Services for the Same Citations in the Field of Veterinary Medicine

B of A Citation Number and Title	B of A Section Heading	BA Section Heading	BAI Section Heading	CA Section Heading	TA Section Heading
20800: Effects of dietary modifications on response of the duckling to aflatoxin	Animal industry - poultry - feeds and feeding	Toxicology, general - food residues, additives and preservatives	Aflatoxins	Animal nutrition	
30660: Electron microscopy of tick-borne fever agent in bovine and ovine phagocytizing leukocytes	Entomology - insect control - pests of animals and man	Veterinary science - microbiology	Tick-borne fever agent	Microbial biochemistry	
57480: In situ breakage of turnip yellow mosaic virus RNA and in situ aggregation of the fragments	Plant science - plant pathology and protection - virus diseases - horticultural crops	Virology, general - plant host viruses	Turnip yellow mosaic virus	Microbial biochemistry	Diseases - virus

Table XX

Section Headings Used by B of A and Four Other Services for the Same Citations in Several Subject Fields

VII. SUMMARY

1. There is wide variation in the numbers and combinations of data elements used in the printed citations of each service. Of 38 identifiable data elements found in printed citations in the services studied, B of A employed 25, compared to an average of 23 for all the services. Six data elements were found to be common to all. Data elements used by more than half of the other services but not by B of A included corporate author location, cross reference to related citation, and price.

2. Format and typography varied considerably among all of the printed indexes. Author indexes were fairly consistent in giving author surname and initials, and citation number. Subject indexes were also fairly consistent in yielding only a citation number.

3. A majority of the services provided an annual subject index and/or an annual cumulation of the citations, although specific patterns of cumulation varied. Only two services had no annual indexes or other cumulations.

4. B of A was the only service providing a separate organization index. Other services provided other types of specialty indexes, such as the geographic indexes of FA, MGA, and WAERSA, and other special features such as review articles.

5. For the same source material, six of eleven comparable services provided substantially more subject access points per citation than B of A did; two services provided more than four times as many subject access points as B of A.

6. When comparing the index terms actually provided by each of the other services and by B of A for the same citations, an average (for single term, and for multiple or hierarchical term services, respectively) of:

> 10-13 percent of term pairs had the same alphabetic entries
> 46-66 percent of term pairs were the same or related concepts
> 52-30 percent of term pairs were unrelated in concept.

Less than one percent of the term-pairs were entirely alphabetically identical.

7. Where there were differences in indexing information applied to the same citation, the other services, rather than B of A, generally provided the additional or unique subject access points.

8. A large percentage (48 to 93 percent, depending upon the service) of the index terms actually used by the other services on the sample B of A citations had the same alphabetic entry as a word in the B of A subject index for 1967. This is in contrast to the relatively small percent of term-pairs with the same alphabetic entry, as identified in the article-by-article comparison.

9. On an article-by-article basis, approximately 42 percent of the index term words assigned by B of A to an article coincide with words in the title.

10. On an article-by-article basis, there is very little agreement or commonality in the printed section headings used by these services for the same citations.

In addition to the above substantive findings, this study effort was also successful in developing and extending the measurement and evaluation techniques applicable to this type of examination. A considerable amount of useful source data was also compiled in a computer data base in a form suitable for further detailed investigation.

The following generalizations with regard to B of A can be made on the basis of the specific findings noted above:

> In thinking of merging or matching the B of A terms with the index terms contributed by other services, NAL should recognize the difficulty of making such matches simply on the basis of an alphabetic match of lists of items, as might be done with a computer program. Even if all of the exception routines corresponding to Table X were included in this program, less than one percent of the terms could be identified as completely redundant and removed in this manner. Approximately ten percent could be identified as having the same entry word, but terms following the entry would not match.
>
> A considerable amount of unique indexing information is provided by each of the services. For this complex of secondary services, this would seem to be an argument in favor of duplicate coverage and processing of the same material by more than one service.